UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 1

IN THE MATTER OF: Landfill & Resource Recovery (L&RR) Superfund Site Respondents listed in Appendix A, Proceeding Under Sections 104, 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9604, 9607 and 9622.	U.S. EPA Region 1 CERCLA Docket No. 01-2015-0066 **ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY**

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"APPENDIX A" is the list of Respondents.

"APPENDIX B" is a map of the approximate edge of the waste management area at the Site.

"APPENDIX C" is the map of the Site.

"APPENDIX D" is the SOW.

ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT
FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY
OPERABLE UNIT NO. 2

I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Settlement Agreement and Order on Consent ("Settlement Agreement") is entered into voluntarily by the United States Environmental Protection Agency ("EPA") and the respondents identified in Appendix A ("Respondents"). The Settlement Agreement concerns the preparation and performance of a remedial investigation and feasibility study ("RI/FS") for Operable Unit 2 ("OU 2") consisting of groundwater and other environmental media outside the boundary of the waste management area at or in connection with the Landfill & Resource Recovery ("L&RR") Superfund Site located generally at Oxford Turnpike, northwest of Pound Hill Road in North Smithfield, Providence County, Rhode Island ("Site") and payment of Future Response Costs incurred by EPA in connection with the RI/FS.

2. This Settlement Agreement is issued under the authority vested in the President of the United States by Sections 104, 107, and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9604, 9607, and 9622 ("CERCLA"). This authority was delegated to the Administrator of EPA on January 23, 1987, by Executive Order 12580, 52 Fed. Reg. 2926 (Jan. 29, 1987), and further delegated to Regional Administrators on May 11, 1994, by EPA Delegation Nos. 14-14-C (Administrative Actions Through Consent Orders) and 14-14-D (Cost Recovery Non-Judicial Agreements and Administrative Consent Orders). These authorities were further redelegated by the Regional Administrator of EPA Region 1 to the Director of the Office of Site Remediation and Restoration on September 3, 1996 by Region 1 Delegation Nos. 14-14-C (Administrative Actions Through Consent Orders) and 14-14-D (Cost Recovery Non-Judicial Agreements and Administrative Consent Orders).

3. In accordance with Sections 104(b)(2) and 122(j)(1) of CERCLA, 42 U.S.C. §§ 9604(b)(2) and 9622(j)(1), EPA notified the U.S. Department of the Interior, the U.S. Department of Commerce-National Oceanic and Atmospheric Administration, and the Rhode Island Department of Environmental Management on January 26, 1994 and on April 8, 2015, of negotiations with potentially responsible parties regarding the release of hazardous substances that may have resulted in injury to the natural resources under Federal and/or State trusteeship.

4. EPA and Respondents recognize that this Settlement Agreement has been negotiated in good faith and that the actions undertaken by Respondents in accordance with this Settlement Agreement do not constitute an admission of any liability. Respondents do not admit, and retain the right to controvert in any subsequent proceedings, other than proceedings to implement or enforce this Settlement Agreement, the validity of the findings of fact in Section V and the conclusions of law and determinations in Section VI. Respondents agree to comply with and be bound by the terms of this Settlement Agreement and further agree that they will not contest the basis or validity of this Settlement Agreement or its terms.

II. PARTIES BOUND

5. This Settlement Agreement applies to and is binding upon EPA and upon Respondents and Respondents' heirs, successors and assigns. Any change in ownership or corporate status of a Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter such Respondent's responsibilities under this Settlement Agreement.

6. Respondents are jointly and severally liable for carrying out all activities required by this Settlement Agreement. In the event of the insolvency or other failure of any one or more Respondents to implement the requirements of this Settlement Agreement, the remaining Respondents shall complete all such requirements.

7. Respondents shall ensure that their contractors, subcontractors, and representatives receive a copy of this Settlement Agreement and comply with this Settlement Agreement. Respondents shall be responsible for any noncompliance with this Settlement Agreement.

8. Each undersigned representative of Respondents certifies that he or she is fully authorized to enter into the terms and conditions of this Settlement Agreement and to execute and legally bind the respective Respondents to this Settlement Agreement.

III. STATEMENT OF PURPOSE

9. In entering into this Settlement Agreement, the objectives of EPA and Respondents are: (a) to determine the nature and extent of contamination and any threat to the public health, welfare, or the environment caused by the release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site, by conducting a Remedial Investigation for OU 2 as more specifically set forth in the Statement of Work ("SOW") attached as Appendix D to this Settlement Agreement; (b) to identify and evaluate remedial alternatives to prevent, mitigate, or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site, by conducting a Feasibility Study for OU 2 as more specifically set forth in the SOW in Appendix D to this Settlement Agreement; and (c) to address Future Response Costs incurred by EPA with respect to this Settlement Agreement.

10. The Work conducted under this Settlement Agreement is subject to approval by EPA and shall provide all appropriate and necessary information to assess Site conditions and evaluate alternatives to the extent necessary to select a remedy that will be consistent with CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300 ("NCP"). Respondents shall conduct all Work under this Settlement Agreement in compliance with CERCLA, the NCP, and all applicable EPA guidance, policies, and procedures.

IV. DEFINITIONS

11. Unless otherwise expressly provided in this Settlement Agreement, terms used in this Settlement Agreement that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations.

Whenever terms listed below are used in this Settlement Agreement or its appendices, the following definitions shall apply:

"CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601-9675.

"Consent Decree" shall mean the settlement agreement and consent decree and all appendices attached thereto, entered in the U.S. District Court for the District of Rhode Island on October 3, 1997, Civil Action No. 97-0078T.

"DOJ" shall mean the United States Department of Justice and its successor departments, agencies, or instrumentalities.

"Day" or "day" shall mean a calendar day. In computing any period of time under this Settlement Agreement, where the last day would fall on a Saturday, Sunday, or federal or state holiday, the period shall run until the close of business of the next working day.

"Effective Date" shall mean the effective date of this Settlement Agreement as provided in Section XXIX.

"EPA" shall mean the United States Environmental Protection Agency and its successor departments, agencies, or instrumentalities.

"EPA Hazardous Substance Superfund" shall mean the Hazardous Substance Superfund established by the Internal Revenue Code, 26 U.S.C. § 9507.

"Engineering Controls" shall mean constructed containment barriers or systems that control one or more of the following: downward migration, infiltration, or seepage of surface runoff or rain; or natural leaching migration of contaminants through the subsurface over time. Examples include pump and treat, caps, engineered bottom barriers, immobilization processes, and vertical barriers.

"Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States incurs after the Effective Date of this Settlement Agreement pursuant to its terms in reviewing or developing plans, reports, and other deliverables submitted pursuant to this Settlement Agreement, in overseeing implementation of the Work, or otherwise implementing, overseeing, or enforcing this Settlement Agreement, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Section XII (Access and Institutional Controls) (including, but not limited to, the cost of attorney time and any monies paid to secure access, including, but not limited to, the amount of just compensation), Paragraph 52 (emergency response), Paragraph 95 (Work takeover), and the costs incurred by the United States in enforcing the terms of this Settlement Agreement, including all costs incurred in connection with Section XV (Dispute Resolution), and all litigation costs. Future Response Costs shall also include Agency for Toxic Substances and Disease Registry ("ATSDR") costs regarding the Site. Future Response Costs shall not include any costs incurred by the United States pursuant to the Consent Decree pertaining to the Site.

"Institutional controls" shall mean non-engineered instruments, such as administrative and/or legal controls, that help to minimize the potential for human exposure to contamination and/or protect the integrity of a remedy by limiting land and/or resource use. Examples of institutional controls include easements and covenants, zoning restrictions, special building permit requirements, and well drilling prohibitions.

"Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.[1]

"Municipal solid waste" or "MSW" shall mean waste material: (1) generated by a household (including a single or multifamily residence); or (2) generated by a commercial, industrial or institutional entity, to the extent that the waste material (i) is essentially the same as waste normally generated by a household; (ii) is collected and disposed of with other municipal solid waste as part of normal municipal solid waste collection services; and (iii) contains a relative quantity of hazardous substances no greater than the relative quantity of hazardous substances contained in waste material generated by a typical single-family household.

"NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

"OU 2" shall mean Operable Unit 2 for the groundwater and other environmental media located outside the boundary of the waste management area of the landfill, such boundary as generally depicted on the map attached as Appendix B.

"Paragraph" shall mean a portion of this Settlement Agreement identified by an Arabic numeral or an upper or lower case letter. References to paragraphs in the SOW will be so identified, e.g., "SOW Paragraph 15."

"Parties" shall mean EPA and Respondents.

"RCRA" shall mean the Resource Conservation and Recovery Act, also known as the Solid Waste Disposal Act, 42 U.S.C. §§ 6901-6992.

"Respondents" shall mean those parties identified in Appendix A.

"RIDEM" shall mean the Rhode Island Department of Environmental Management and any successor departments or agencies of the State.

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[1] The Superfund currently is invested in 52-week MK notes. The interest rate for these MK notes changes on October 1 of each year. Current and historical rates are available online at http://www.epa.gov/ocfopage/finstatement/superfund/int_rate.htm.

"Section" shall mean a portion of this Settlement Agreement identified by a Roman numeral. References to sections in the SOW will be so identified, e.g., "SOW Section V."

"Settlement Agreement" shall mean this Administrative Settlement Agreement and Order on Consent, the SOW, all appendices attached hereto (listed in Section XXVII) and all documents incorporated by reference into this document including without limitation EPA-approved submissions. EPA-approved submissions (other than progress reports) are incorporated into and become a part of the Settlement Agreement upon approval by EPA. In the event of conflict between this Settlement Agreement and any appendix or other incorporated documents, this Settlement Agreement shall control.

"Site" shall mean the Landfill & Resource Recovery (L&RR) Superfund Site, encompassing approximately 36 acres, located on Oxford Turnpike, northwest of Pound Hill Road in North Smithfield, Providence County, Rhode Island, and all areas where hazardous substances have come to be located, as depicted generally on the map attached as Appendix C.

"L&RR Superfund Site Special Account" shall mean the special account, within the EPA Hazardous Substance Superfund, established for the Site by EPA pursuant to Section 122(b)(3) of CERCLA, 42 U.S.C. § 9622(b)(3).

"State" shall mean the State of Rhode Island.

"Statement of Work" or "SOW" shall mean the Statement of Work for development of the OU 2 RI/FS, as set forth in Appendix D to this Settlement Agreement. The Statement of Work is incorporated into this Settlement Agreement and is an enforceable part of this Settlement Agreement as are any modifications made thereto in accordance with this Settlement Agreement.

"United States" shall mean the United States of America and each department, agency, and instrumentality of the United States, including EPA.

"Waste Material" shall mean (a) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (b) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (c) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); and (d) any "hazardous waste" under R.I.G.L. Chapter 23-19.1.

"Work" shall mean all activities Respondents are required to perform under this Settlement Agreement, except those required by Section XIV (Retention of Records) and except any and all work required under the Consent Decree pertaining to the Site.

V. FINDINGS OF FACT

12. The Site consists of an inactive landfill in the Town of North Smithfield, Rhode Island that historically received domestic, commercial and industrial wastes; areas where disposal of hazardous substances was conducted and where hazardous substances have come to be located; wetlands; and a contaminated groundwater plume adjacent to the landfill. The

landfill portion of the Site covers approximately 28 acres of a 36 acre parcel of land owned by Landfill and Resource Recovery, Inc. ("L&RR, Inc.").

13. The Site is located in a rural area primarily surrounded by woodlands. Three unnamed streams exist south and east of the landfill at the Site. These streams flow through wetlands, also located south and east of the landfill at the Site, and discharge into Trout Brook. Trout Brook flows north for about 2,000 feet to Trout Brook Pond, which discharges into Slatersville Reservoir. The Slatersville Reservoir and Trout Brook are Class B water bodies suitable for fishing, swimming and other recreational purposes.

14. There are homes near the Site that have private drinking wells and use groundwater as a source of drinking water. These homes are located on Oxford Turnpike, Pound Hill Road and other nearby roads. The closest residence is approximately 1,200 feet southeast of the landfill, on Pound Hill Road. There are approximately thirty-nine (39) drinking water wells within approximately a one-half mile radius of the Site. Some of these private drinking water wells are located downgradient from the landfill at the Site. The Site is located over the Slatersville Aquifer, which was been designated as a future drinking water source by the State of Rhode Island, and is a current source of drinking water.

15. The Narragansett Electric Company, d/b/a National Grid, maintains a right-of-way for power lines adjacent to the landfill at the Site.

16. The landfill at the Site is a former sand and gravel pit. In 1969, the landfill and adjacent areas were purchased by Landfill, Inc. and began operation as a solid waste disposal area. The landfill and adjacent areas were sold to L&RR, Inc. in 1974, which developed it into a facility accepting commercial, domestic, and industrial waste. L&RR, Inc. has owned the landfill at all times since 1974, including the period between March 1977 and September 1979 when Hazardous Substances were disposed of at the landfill. In November 1977, L&RR Inc. submitted plans for installing seven (7) monitoring wells to the Rhode Island Department of Health. These wells were installed to comply with State regulations pertaining to hazardous industrial waste disposal. Beginning in March 1978, RIDEM required L&RR, Inc. to manifest all hazardous industrial waste, as defined by State law, entering the landfill. Approximately 707,755 gallons of waste were manifested for disposal at the landfill between March 1978 and September 1979. The manifested waste included Hazardous Substances in liquid, sludge and solid forms, both drummed and bulk. In September 1979, RIDEM ordered L&RR Inc. to cease accepting hazardous industrial wastes at the Site.

17. Based on the RIDEM manifests submitted to EPA and additional documents, EPA has estimated that more than two (2) million gallons of waste, which include Hazardous Substances, was accepted for disposal at the landfill at the Site between March 1977 and September 1979.

18. Wastes disposed of at the landfill at the Site during the period from March 1977 through September 1979 include, but are not limited to, waste oil containing metals, asbestos, calcium fluoride sludge with lead, scrap paints containing volatile organic compounds ("VOCs") and alcohols, chemical compounds containing VOCs, batteries containing mercury, metal hydroxide sludge containing copper and nickel, lime sludge containing iron and copper, paint

sludge containing VOCs, waste sludge containing hydroxide, calcium and zinc sludge, HPR 106 containing butyl acetate and xylene, filtrate waste containing methanol and organic byproducts, tank rinse containing sodium hydroxide and organic byproducts, rinse water containing ammonia and ethylene diamine tetracetic acid (EDTA), sodium oxylate sludge containing metals, organic latex and organic latex wash containing copper, nickel, chromium, silver and VOCs, waste oil and solvents containing VOCs, water soluble dye and fibers containing acids and VOCs, solvents and alcohol containing acetone, toluene, methyl ethyl ketone, isopropanol, isobutyl acetate and cyclohexanone, waste coating material containing methyl ethyl ketone, isobutyl acetate, cyclohexanone and ethylene vinyl acetate, waste oil containing arsenic, cadmium, chromium, mercury, lead, selenium and silver, organic latex waste containing styrene and ammonia, waste solvents containing 1,1,1-trichloroethane, grinding swarf containing selenium, mercury and arsenic, fine wire tank waste water containing metals, and adhesives and solvents containing methylene chloride, ketones and esters.

19. Hazardous substances, including liquid wastes, were either poured directly into the landfill at the Site or deposited in drums into the landfill.

20. Sampling reveals the presence of the Hazardous Substances in groundwater, surface water and/or sediments at the Site, including the following constituents: arsenic, benzene, cis-1,2-dichloroethene, vinyl chloride, tetrachloroethene ("PCE"), trichloroethane ("TCE"), 1,1-dichloroethane, and 1,4-dioxane.

21. In groundwater samples collected in 2013 and 2014 during groundwater monitoring at wells screened in the overburden aquifer and a bedrock borehole located downgradient of the landfill at the Site, hazardous substances, including cis-1,2-dichloroethene, vinyl chloride, arsenic, and benzene, were detected at concentrations that exceed federal maximum contaminant levels ("MCLs"), trichloroethane was detected at a concentration that exceeds the acceptable hazard index of 1, and 1,1-dichloroethane and 1,4-dioxane were detected at concentrations that exceed drinking water risk-based screening levels. In surface water samples collected in 2014 in Trout Brook Pond, which is located downgradient of the landfill at the Site, hazardous substances, including arsenic and 1,4-dioxane, were detected at concentrations indicating that contaminated groundwater is discharging into surface water near the eastern edge of the landfill.

22. Hazardous substances, including those listed in Paragraphs 20 and 21, have been found in groundwater that extends eastward beyond the edge of the waste management area at the Site, the nature and extent of which is not currently fully defined.

23. Groundwater elevation data indicate that the groundwater is flowing in an east-northeasterly direction at the Site.

24. Residents living near the Site, including residents located to the east of the landfill, use private wells as their primary drinking water source. A bedrock borehole located downgradient from the landfill and approximately 300 feet from a resident who uses a private well for drinking water was found to contain PCE, TCE and 1,4-dioxane in 2014.

25. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Site on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on September 8, 1983, 48 Fed. Reg. 40,671.

26. In response to a release or a substantial threat of a release of a hazardous substance(s) at or from the Site, EPA commenced in May 1986, a Remedial Investigation and Feasibility Study for the Site pursuant to 40 C.F.R. § 300.430.

27. EPA issued a Remedial Investigation Report for the Site in June 1988 and EPA also issued a Feasibility Study Report in June 1988.

28. Pursuant to Sections 104(e) and 106(a) of CERCLA, EPA Region 1 issued a Unilateral Administrative Order (U.S. EPA Docket No. I-90-1085) on June 29, 1990, for performance of response actions at the Site. The Unilateral Administrative Order ("UAO") was made effective against the respondents named in the UAO on September 19, 1990. The UAO was modified by a First Modification to Scope of Work and Administrative Order on October 19, 1990, which modified the Scope of Work appended to the UAO and named additional respondents. The UAO was further modified by a Second Modification to Scope of Work and Administrative Order on January 30, 1992, which deleted certain respondents. Certain of the respondents subject to the UAO performed remedial activities pursuant to the UAO, including construction of the remedy set forth in the final 100% Design for the remedy at the Site approved by EPA pursuant to the UAO.

29. On January 30, 1992, EPA entered into a de minimis settlement pursuant to Section 122(g) of CERCLA, 42 U.S.C. § 9622(g), with 46 potentially responsible parties each of which, according to EPA, disposed of less than 1% of the hazardous substances at the Site.

30. The Respondents' relationships to the Site are described below:

a. Respondents Landfill & Resource Recovery, Inc., TA Consulting, LLC, Charles S. Wilson, and David J. Wilson currently own and/or operate the landfill or owned and/or operated the landfill at the time of disposal of hazardous substances at the Site.

b. Respondents Avnet, Inc., Bixby International Corporation, Clean Harbors of Braintree, Inc., Corning Incorporated, Electric Boat Corporation, KIK Custom Products, Inc., Life Technologies Corporation, Narragansett Electric Company d/b/a National Grid, Inc., NSTAR Electric Company d/b/a Eversource Energy, Olin Corporation, SPX Corporation, Stanley-Bostitch, Inc., and Waste Management of Massachusetts, Inc., sent hazardous substances to the Site for disposal or treatment or are the successors to one or more companies that sent hazardous substances to the Site for disposal or treatment.

c. Respondents Clean Harbors of Braintree, Inc., Waste Management of Massachusetts, Inc., Waste Management of Rhode Island, Inc., and J. Scott Cannon transported hazardous substances to the Site or are the successors to one or more companies that transported hazardous substances to the Site.

31. The remedy selected in the September 29, 1988 Record of Decision ("ROD") for the Site, as modified by two ESDs, dated March 8, 1991 and September 16, 1996, included:

upgrading the landfill closure, installing a landfill gas collection and thermal destruction system, and periodic monitoring of groundwater and air at the Site for a period of thirty years. Requirements for surface water monitoring and to implement institutional controls for land and water use were added in 1997 by the Consent Decree that was entered for the Site, which is described in Paragraph 32.

32. In 1997, the United States and certain settling defendants entered into a Settlement Agreement and Consent Decree that resolved certain claims of the United States and required the settling defendants to perform the work described in the Consent Decree, including: the remaining components of the remedial action not completed pursuant to the UAO, and all activities required to maintain the effectiveness of the remedial action as required under the Operation and Maintenance Plan and/or Post Closure Operation and Maintenance Plan approved or developed by EPA pursuant to the UAO or modified and approved pursuant to the Consent Decree.

VI. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth in Section V, EPA has determined that:

33. The L&RR Superfund Site is a "facility" as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

34. The contamination, including arsenic, benzene, cis-1,2-dichloroethene, vinyl chloride, tetrachloroethene ("PCE"), trichloroethane ("TCE"), 1,1-dichloroethane, and 1,4-dioxane found at the Site, as identified in the Findings of Fact above, includes [a] "hazardous substance[s]" as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

35. The conditions described in Paragraphs 12 to 32 of the Findings of Fact in Section V above constitute an actual and/or threatened "release" of a hazardous substance from the facility as defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

36. Each Respondent is a "person" as defined in Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

37. Respondents are responsible parties under Sections 104, 107, and 122 of CERCLA, 42 U.S.C. §§ 9604, 9607 and 9622.

a. Each Respondent is a responsible party under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and is jointly and severally liable for performance of response action and for response costs incurred and to be incurred at the Site.

b. Respondents Landfill & Resource Recovery, Inc., TA Consulting, LLC, Charles S. Wilson, and David J. Wilson are the "owner(s)" and/or "operator(s)" of the facility, and the "owner(s)" and/or "operator(s)" of the facility at the time of disposal of the hazardous substances at the facility, as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(1) and (a)(2) of CERCLA, 42 U.S.C. § 9607(a)(1).

c. Respondents Avnet, Inc., Bixby International Corporation, Clean Harbors of Braintree, Inc., Corning Incorporated, Electric Boat Corporation, KIK Custom Products, Inc., Life Technologies Corporation, Narragansett Electric Company d/b/a National Grid, Inc., NSTAR Electric Company d/b/a Eversource Energy, Olin Corporation, SPX Corporation, Stanley-Bostitch, Inc., and Waste Management of Massachusetts, Inc., arranged for disposal or treatment, or arranged with a transporter for transport for disposal or treatment of hazardous substances at the facility or are the successors to companies that arranged for disposal or treatment, or arranged with a transporter for transport for disposal or treatment of hazardous substances at the facility, within the meaning of Section 107(a)(3) of CERCLA, 42 U.S.C. § 9607(a)(3).

d. Respondents Clean Harbors of Braintree, Inc., Waste Management of Massachusetts, Inc., Waste Management of Rhode Island, Inc., and J. Scott Cannon accepted hazardous substances for transport to the facility or are the successors to companies that accepted hazardous substances for transport to the facility, within the meaning of Section 107(a)(4) of CERCLA, 42 U.S.C. § 9607(a)(4).

38. The actions required by this Settlement Agreement are necessary to protect the public health, welfare, or the environment, are in the public interest, 42 U.S.C. § 9622(a), are consistent with CERCLA and the NCP, 42 U.S.C. §§ 9604(a)(1), 9622(a), and will expedite effective remedial action and minimize litigation, 42 U.S.C. § 9622(a).

39. EPA has determined that Respondents are qualified to conduct the OU 2 RI/FS within the meaning of Section 104(a) of CERCLA, 42 U.S.C. § 9604(a), and will carry out the Work properly and promptly, in accordance with Sections 104(a) and 122(a) of CERCLA, 42 U.S.C. §§ 9604(a) and 9622(a), if Respondents comply with the terms of this Settlement Agreement.

VII. SETTLEMENT AGREEMENT AND ORDER

40. Based upon the foregoing Findings of Fact and Conclusions of Law and Determinations, it is hereby Ordered and Agreed that Respondents shall comply with all provisions of this Settlement Agreement, including, but not limited to, all appendices to this Settlement Agreement and all documents incorporated by reference into this Settlement Agreement.

VIII. DESIGNATION OF CONTRACTORS AND PROJECT COORDINATORS

41. Selection of Contractors, Personnel. All Work performed under this Settlement Agreement shall be under the direction and supervision of qualified personnel. Within 30 days after the Effective Date, and before the Work outlined below begins, Respondents shall notify EPA in writing of the names, titles, and qualifications of the personnel, including contractors, subcontractors, consultants, and laboratories to be used in carrying out such Work. With respect to any proposed contractor, Respondents shall demonstrate that the proposed contractor has a quality system that complies with ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," (American National Standard, January 5, 1995, or most recent version), by submitting a copy of

the proposed contractor's Quality Management Plan ("QMP"). The QMP should be prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)," (EPA/240/B-01/002, March 2001; Reissued May 2006) or equivalent documentation as determined by EPA. The qualifications of the persons undertaking the Work for Respondents shall be subject to EPA's review, for verification that such persons meet minimum technical background and experience requirements. This Settlement Agreement is contingent on Respondents' demonstration to EPA's satisfaction that Respondents are qualified to perform properly and promptly the actions set forth in this Settlement Agreement. If EPA disapproves in writing of any person's technical qualifications, Respondents shall notify EPA of the identity and qualifications of the replacements within 30 days after the written notice. If EPA subsequently disapproves of the replacement, EPA reserves the right to terminate this Settlement Agreement and to conduct a complete OU 2 RI/FS, and to seek reimbursement for costs and penalties from Respondents. During the course of the OU 2 RI/FS, Respondents shall notify EPA in writing of any changes or additions in the personnel used to carry out such Work, providing their names, titles, and qualifications. EPA shall have the same right to disapprove changes and additions to personnel as it has hereunder regarding the initial notification.

42. Within 30 days after the Effective Date, Respondents shall designate a Project Coordinator who shall be responsible for administration of all actions by Respondents required by this Settlement Agreement and shall submit to EPA the designated Project Coordinator's name, address, telephone number, and qualifications. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available during Site Work. EPA retains the right to disapprove of the designated Project Coordinator. If EPA disapproves of the designated Project Coordinator, Respondents shall retain a different Project Coordinator and shall notify EPA of that person's name, address, telephone number, and qualifications within 14 days following EPA's disapproval. Respondents shall have the right to change their Project Coordinator, subject to EPA's right to disapprove. Respondents shall notify EPA 14 days before such a change is made. The initial notification may be made orally, but shall be promptly followed by a written notification. Receipt by Respondents' Project Coordinator of any notice or communication from EPA relating to this Settlement Agreement shall constitute receipt by Respondents.

43. EPA has designated Anna Krasko in the Office of Site Remediation and Restoration as its Remedial Project Manager. EPA will notify Respondents of a change of its designated Remedial Project Manager. Except as otherwise provided in this Settlement Agreement, Respondents shall direct all submissions required by this Settlement Agreement to the Remedial Project Manager at 5 Post Office Square, Suite 100, Mail Code OSRR07-1, Boston, MA 02109-3912, krasko.anna@epa.gov.

44. EPA's Remedial Project Manager shall have the authority lawfully vested in a Remedial Project Manager ("RPM") and On-Scene Coordinator ("OSC") by the NCP. In addition, EPA's Remedial Project Manager shall have the authority consistent with the NCP, to halt any Work required by this Settlement Agreement, and to take any necessary response action when she determines that conditions at the Site may present an immediate endangerment to public health or welfare or the environment. The absence of the EPA Remedial Project Manager from the area under study pursuant to this Settlement Agreement shall not be cause for the stoppage or delay of Work.

45. EPA shall arrange for a qualified person to assist in its oversight and review of the conduct of the OU 2 RI/FS, as required by Section 104(a) of CERCLA, 42 U.S.C. § 9604(a). Such person shall have the authority to observe Work and make inquiries in the absence of EPA, but not to modify the OU 2 RI/FS Work Plan.

IX. WORK TO BE PERFORMED

46. Respondents shall conduct the OU 2 RI/FS in accordance with the provisions of this Settlement Agreement, the SOW, CERCLA, the NCP, and EPA guidance, including, but not limited to the "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (OSWER Directive # 9355.3-01, October 1988 or subsequently issued guidance) ("RI/FS Guidance"), "Guidance for Data Useability in Risk Assessment" (OSWER Directive #9285.7-09A, April 1992 or subsequently issued guidance), and guidance referenced therein, and guidance referenced in the SOW, as may be amended or modified by EPA. The OU 2 Remedial Investigation ("RI") shall consist of collecting data to characterize site conditions, determining the nature and extent of the contamination at or from the Site, assessing risk to human health and the environment, and conducting treatability testing as necessary to evaluate the potential performance and cost of the treatment technologies that are being considered. The OU 2 Feasibility Study ("FS") shall determine and evaluate (based on treatability testing, where appropriate) alternatives for remedial action to prevent, mitigate, or otherwise respond to or remedy the release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site. The alternatives evaluated must include, but shall not be limited to, the range of alternatives described in the NCP, and shall include remedial actions that utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In evaluating the alternatives, Respondents shall address the factors required to be taken into account by Section 121 of CERCLA, 42 U.S.C. § 9621, and Section 300.430(e) of the NCP, 40 C.F.R. § 300.430(e). If, at any time during the RI/FS process, the Respondents propose or EPA determines that an engineering evaluation and cost analysis ("EE/CA") should be performed at the Site in preparation for a non-time critical removal action ("NTCRA"), the Respondents shall conduct an EE/CA concurrently with the RI/FS. Upon request by EPA, Respondents shall submit in electronic form all portions of any plan, report, or other deliverable Respondents are required to submit pursuant to provisions of this Settlement Agreement.

47. Upon receipt of the draft OU 2 FS report, EPA will evaluate, as necessary, the estimates of the risk to the public and environment that are expected to remain after a particular remedial alternative has been completed and will evaluate the durability, reliability, and effectiveness of any proposed Institutional Controls.

48. Modification of the OU 2 RI/FS Work Plan.

a. If at any time during the OU 2 RI/FS process, Respondents identify a need for additional data, Respondents shall submit a memorandum documenting the need for additional data to the EPA Project Coordinator within 7 days after identification. EPA in its discretion will determine whether the additional data will be collected by Respondents and whether it will be incorporated into plans, reports, and other deliverables.

b. In the event of unanticipated or changed circumstances at the Site, Respondents shall notify the EPA Project Coordinator by telephone within 24 hours of discovery of the unanticipated or changed circumstances. In the event that EPA, after a reasonable opportunity for review and comment by RIDEM, determines that the unanticipated or changed circumstances warrant changes in the OU 2 RI/FS Work Plan, EPA shall modify or amend the OU 2 RI/FS Work Plan in writing accordingly. Respondents shall perform the OU 2 RI/FS Work Plan as modified or amended.

c. EPA, after a reasonable opportunity for review and comment by RIDEM, may determine that in addition to tasks defined in the initially approved OU 2 RI/FS Work Plan, other additional Work may be necessary to accomplish the objectives of the OU 2 RI/FS. Respondents agree to perform these response actions in addition to those required by the initially approved OU 2 RI/FS Work Plan, including any approved modifications, if EPA determines that such actions are necessary for a complete OU 2 RI/FS.

d. Respondents shall confirm their willingness to perform the additional Work in writing to EPA within 7 days after receipt of the EPA request. If Respondents object to any modification determined by EPA to be necessary pursuant to this Paragraph, Respondents may seek dispute resolution pursuant to Section XV (Dispute Resolution). The SOW and/or OU 2 RI/FS Work Plan shall be modified in accordance with the final resolution of the dispute.

e. Respondents shall complete the additional Work according to the standards, specifications, and schedule set forth or approved by EPA, after a reasonable opportunity for review and comment by RIDEM, in a written modification to the OU 2 RI/FS Work Plan or written OU 2 RI/FS Work Plan supplement. EPA reserves the right to conduct the Work itself at any point, to seek reimbursement from Respondents, and/or to seek any other appropriate relief.

f. Nothing in this Paragraph shall be construed to limit EPA's authority to require performance of further response actions at the Site.

49. Off-Site Shipment.

a. Respondents may ship hazardous substances, pollutants and contaminants from the Site to an off-Site facility only if they comply with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Respondents will be deemed to be in compliance with CERCLA Section 121(d)(3) and 40 C.F.R. § 300.440 regarding a shipment if Respondents obtain a prior determination from EPA that the proposed receiving facility for such shipment is acceptable under the criteria of 40 C.F.R. § 300.440(b). Respondents may ship Investigation Derived Waste ("IDW") from the Site to an off-Site facility only if Respondents comply with EPA's "Guide to Management of Investigation Derived Waste," OSWER 9345.3-03FS (Jan. 1992).

b. Respondents may ship Waste Material from the Site to an out-of-state waste management facility only if, prior to any shipment, they provide written notice to the appropriate state environmental official in the receiving facility's state and to the RPM. This written notice requirement shall not apply to any off-Site shipments when the total quantity of all

such shipments will not exceed ten cubic yards. The written notice must include the following information, if available: (1) the name and location of the receiving facility; (2) the type and quantity of Waste Material to be shipped; (3) the schedule for the shipment; and (4) the method of transportation. Respondents also shall notify the state environmental official referenced above and the RPM of any major changes in the shipment plan, such as a decision to ship the Waste Material to a different out-of-state facility. Respondents shall provide the written notice after the award of the contract for remedial investigation and feasibility study and before the Waste Material is shipped.

50. Meetings. Respondents shall make presentations at, and participate in, meetings at the request of EPA during the initiation, conduct, and completion of the OU 2 RI/FS. In addition to discussion of the technical aspects of the OU 2 RI/FS, topics will include anticipated problems or new issues. Meetings will be scheduled at EPA's discretion, after reasonable coordination with RIDEM.

51. Progress Reports. In addition to the plans, reports, and other deliverables set forth in this Settlement Agreement, Respondents shall provide to EPA and RIDEM quarterly progress reports by the 10th day of the following quarter. At a minimum, with respect to the preceding quarter, these progress reports shall (a) describe the actions that have been taken to comply with this Settlement Agreement during that quarter, (b) include all results of sampling and tests and all other data received by Respondents, (c) describe Work planned for the next quarter with schedules relating such Work to the overall project schedule for OU 2 RI/FS completion, and (d) describe all problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays. Upon request by EPA, Respondents shall increase the frequency of progress reports to monthly.

52. Emergency Response and Notification of Releases.

a. In the event of any action or occurrence during, arising from, or relating to performance of the Work that causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Respondents shall immediately take all appropriate action. Respondents shall take these actions in accordance with all applicable provisions of this Settlement Agreement, including, but not limited to, the Health and Safety Plan, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondents shall also immediately notify the EPA Remedial Project Manager or, in the event of her unavailability, the Regional Duty Officer of the Emergency Planning and Response Branch, EPA Region 1 at (617) 918-1224 and the National Response Center, at (800) 424-8802, as well as RIDEM, of the incident or Site conditions. In the event that Respondents fail to take appropriate response action as required by this Paragraph, and EPA takes such action instead, Respondents shall reimburse EPA all costs of the response action not inconsistent with the NCP pursuant to Section XVIII (Payment of Response Costs).

b. In addition, in the event of any release of a hazardous substance from the Site, Respondents shall immediately notify the EPA Remedial Project Manager or Regional Duty Officer at (617) 918-1224 and the National Response Center at (800) 424-8802, as well as

RIDEM. Respondents shall submit a written report to EPA within 7 days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq*.

X. EPA APPROVAL OF PLANS AND OTHER SUBMISSIONS

53. After review of any plan, report, or other item that is required to be submitted for approval pursuant to this Settlement Agreement, in a notice to Respondents, EPA, after reasonable opportunity for review and comment by RIDEM, shall: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove, in whole or in part, the submission, directing that Respondents modify the submission; or (e) any combination of the above.

54. In the event of approval, approval upon conditions, or modification by EPA, after reasonable opportunity for review and comment by RIDEM, pursuant to Paragraph 53.a, 53.b, 53.c, or 53.e, Respondents shall proceed to take any action required by the plan, report, or other deliverable, as approved or modified by EPA subject only to their right to invoke the Dispute Resolution procedures set forth in Section XV (Dispute Resolution) with respect to the modifications or conditions made by EPA. Following EPA approval or modification of a submission or portion thereof, Respondents shall not thereafter alter or amend such submission or portion thereof unless directed by EPA. In the event that EPA modifies the submission to cure the deficiencies pursuant to Paragraph 53.c and the submission had a material defect, EPA retains the right to seek stipulated penalties, as provided in Section XVI (Stipulated Penalties).

55. Resubmission.

a. Upon receipt of a notice of disapproval, Respondents shall, within 21 days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the plan, report, or other deliverable for approval. Any stipulated penalties applicable to the submission, as provided in Section XVI, shall accrue during the 21-day period or otherwise specified period but shall not be payable unless the resubmission is disapproved or modified due to a material defect as provided in Paragraph 56.

b. Notwithstanding the receipt of a notice of disapproval, Respondents shall proceed to take any action required by any non-deficient portion of the submission, unless otherwise directed by EPA. Implementation of any non-deficient portion of a submission shall not relieve Respondents of any liability for stipulated penalties under Section XVI (Stipulated Penalties).

c. Respondents shall not proceed with any activities or tasks dependent on the following deliverables until receiving EPA approval, approval on condition, or modification of such deliverables: all plans and reports required by the SOW. While awaiting EPA approval, approval on condition, or modification of any such deliverables, Respondents shall proceed with

all other tasks and activities that may be conducted independently of these deliverables, in accordance with the schedule set forth under this Settlement Agreement.

d. EPA reserves the right to stop Respondents from proceeding further, either temporarily or permanently, on any task, activity or deliverable at any point during the OU 2 RI/FS.

56. If EPA disapproves a resubmitted plan, report, or other deliverable, or portion thereof, EPA may again direct Respondents to correct the deficiencies. EPA shall also retain the right to modify or develop the plan, report, or other deliverable. Respondents shall implement any such plan, report, or deliverable as corrected, modified, or developed by EPA, subject only to Respondents' right to invoke the procedures set forth in Section XV (Dispute Resolution).

57. If upon resubmission, a plan, report, or other deliverable is disapproved or modified by EPA due to a material defect, Respondents shall be deemed to have failed to submit such plan, report, or other deliverable timely and adequately unless Respondents invoke the dispute resolution procedures in accordance with Section XV (Dispute Resolution) and EPA's action is revoked or substantially modified pursuant to a Dispute Resolution decision issued by EPA or superseded by an agreement reached pursuant to that Section. The provisions of Section XV (Dispute Resolution) and Section XVI (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. If EPA's disapproval or modification is not otherwise revoked, substantially modified, or superseded as a result of a decision or agreement reached pursuant to the Dispute Resolution process set forth in Section XV, stipulated penalties shall accrue for such violation from the date on which the initial submission was originally required, as provided in Section XVI.

58. In the event that EPA takes over some of the tasks, but not the preparation of the OU 2 RI Report or the OU 2 FS Report, Respondents shall incorporate and integrate information supplied by EPA into the final reports.

59. All plans, reports, and other deliverables submitted to EPA under this Settlement Agreement shall, upon approval or modification by EPA, be incorporated into and enforceable under this Settlement Agreement. In the event EPA approves or modifies a portion of a plan, report, or other deliverable submitted to EPA under this Settlement Agreement, the approved or modified portion shall be incorporated into and enforceable under this Settlement Agreement.

60. Neither failure of EPA to expressly approve or disapprove of Respondents' submissions within a specified time period, nor the absence of comments, shall be construed as approval by EPA. Whether or not EPA gives express approval for Respondents' deliverables, Respondents are responsible for preparing deliverables acceptable to EPA.

XI. QUALITY ASSURANCE, SAMPLING, AND ACCESS TO INFORMATION

61. Quality Assurance. Respondents shall assure that Work performed, samples taken, and analyses conducted conform to the requirements of the SOW, the QAPP, and guidance identified therein. Respondents will assure that field personnel used by Respondents are properly trained in the use of field equipment and in chain of custody procedures.

Respondents shall only use laboratories that have a documented quality system that complies with "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01/002, March 2001; Reissued May 2006) or equivalent documentation as determined by EPA.

62. Sampling.

a. All results of sampling, tests, modeling, or other data (including raw data) generated by Respondents, or on Respondents' behalf, during the period that this Settlement Agreement is effective, shall be submitted to EPA and RIDEM in the next quarterly progress report as described in Paragraph 51. EPA will make available to Respondents validated data generated by EPA unless it is exempt from disclosure by any federal or state law or regulation.

b. Respondents shall verbally notify EPA and the State at least 14 days prior to conducting significant field events as described in the SOW, OU 2 RI/FS Work Plan, or Sampling and Analysis Plan. At EPA's verbal or written request, or the request of EPA's oversight assistant, Respondents shall allow split or duplicate samples to be taken by EPA (and its authorized representatives) and/or the State of any samples collected in implementing this Settlement Agreement. All split samples of Respondents shall be analyzed by the methods identified in the QAPP.

63. Access to Information.

a. Respondents shall provide to EPA and the State, copies of all records, reports, documents, and other information (including records, reports, documents, and other information in electronic form) (hereinafter referred to as "Records") within their possession or control or that of their contractors or agents relating to activities at the Site or to the implementation of this Settlement Agreement, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Respondents shall also make available to EPA and the State, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

b. Respondents may assert business confidentiality claims covering part or all of the Records submitted to EPA and the State under this Settlement Agreement to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Records determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies Records when they are submitted to EPA and the State, or if EPA has notified Respondents that the Records are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such Records without further notice to Respondents. Respondents shall segregate and clearly identify all Records submitted under this Settlement Agreement for which Respondents assert business confidentiality claims.

c. Respondents may assert that certain Records are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Respondents assert such a privilege in lieu of providing Records, they shall provide EPA and the State with

the following: (i) the title of the Record; (ii) the date of the Record; (iii) the name, title, affiliation (e.g., company or firm), and address of the author of the Record; (iv) the name and title of each addressee and recipient; (v) a description of the contents of the Record; and (vi) the privilege asserted by Respondents. However, no Records created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged or confidential.

d. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other Records evidencing conditions at or around the Site.

64. In entering into this Settlement Agreement, Respondents waive any objections to any data gathered, generated, or evaluated by EPA, the State or Respondents in the performance or oversight of the Work that has been verified according to the quality assurance/quality control ("QA/QC") procedures required by the Settlement Agreement or any EPA-approved OU 2 RI/FS Work Plans or Sampling and Analysis Plans. If Respondents object to any other data relating to the OU 2 RI/FS, Respondents shall submit to EPA a report that specifically identifies and explains its objections, describes the acceptable uses of the data, if any, and identifies any limitations to the use of the data. The report must be submitted to EPA within 15 days after the quarterly progress report containing the data.

XII. SITE ACCESS AND INSTITUTIONAL CONTROLS

65. If the Site, or any other property where access is needed to implement this Settlement Agreement, is owned or controlled by any of Respondents, such Respondents shall, commencing on the Effective Date, provide the other Respondents, EPA, the State, and their representatives, including contractors, with access at all reasonable times to the Site, or such other property, for the purpose of conducting any activity related to this Settlement Agreement.

66. Where any action under this Settlement Agreement is to be performed in areas owned by or in possession of someone other than Respondents, Respondents shall use their best efforts to obtain all necessary access agreements within 60 days after the Effective Date, or as otherwise specified in writing by the EPA Project Coordinator. Respondents shall immediately notify EPA if after using their best efforts they are unable to obtain such agreements. For purposes of this Paragraph, "best efforts" includes the payment of reasonable sums of money in consideration of access. Respondents shall describe in writing their efforts to obtain access. If Respondents cannot obtain access agreements, EPA may either (a) obtain access for Respondents or assist Respondents in gaining access, to the extent necessary to effectuate the response actions described in this Settlement Agreement, using such means as EPA deems appropriate; (b) perform those tasks or activities with EPA contractors; or (c) terminate the Settlement Agreement. Respondents shall reimburse EPA for all costs and attorney's fees incurred by the United States in obtaining such access, in accordance with the procedures in Section XVIII (Payment of Response Costs). If EPA performs those tasks or activities with EPA contractors and does not terminate the Settlement Agreement, Respondents shall perform all other tasks or activities not requiring access to that property, and shall reimburse EPA for all costs incurred in performing such tasks or activities. Respondents shall integrate the results of any such tasks or activities undertaken by EPA into its plans, reports, and other deliverables.

67. Notwithstanding any provision of this Settlement Agreement, EPA and the State retain all of their access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

XIII. COMPLIANCE WITH OTHER LAWS

68. Respondents shall comply with all applicable state and federal laws and regulations when performing the OU 2 RI/FS. No local, state, or federal permit shall be required for any portion of any action conducted entirely on-site, including studies, if the action is selected and carried out in compliance with Section 121 of CERCLA, 42 U.S.C. § 9621. Where any portion of the Work is to be conducted off-Site and requires a federal or state permit or approval, Respondents shall submit timely and complete applications and take all other actions necessary to obtain and to comply with all such permits or approvals. This Settlement Agreement is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

XIV. RETENTION OF RECORDS

69. During the pendency of this Settlement Agreement and for a minimum of 10 years after commencement of construction of any remedial action, each Respondent shall preserve and retain all non-identical copies of Records (including Records in electronic form) now in its possession or control or that come into its possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Site, regardless of any corporate retention policy to the contrary. Until 10 years after commencement of construction of any remedial action, Respondents shall also instruct their contractors and agents to preserve all Records of whatever kind, nature, or description relating to performance of the Work.

70. At the conclusion of this document retention period, Respondents shall notify EPA at least 90 days prior to the destruction of any such Records, and, upon request by EPA, Respondents shall deliver any such Records to EPA. Respondents may assert that certain Records are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondents assert such a privilege, they shall provide EPA with the following: (a) the title of the Record; (b) the date of the Record; (c) the name and title of the author of the Record; (d) the name and title of each addressee and recipient; (d) a description of the subject of the Record; and (f) the privilege asserted by Respondents. However, no Records created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged or confidential.

71. Each Respondent hereby certifies individually that to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed, or otherwise disposed of any Records (other than identical copies) relating to its potential liability regarding the Site since the earlier of notification of potential liability by EPA or the filing of suit against it regarding the Site and that it has fully complied with any and all EPA and State requests for information regarding the Site pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927, and state law.

XV. DISPUTE RESOLUTION

72. Unless otherwise expressly provided for in this Settlement Agreement, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Settlement Agreement. The Parties shall attempt to resolve any disagreements concerning this Settlement Agreement expeditiously and informally.

73. If Respondents object to any EPA action taken pursuant to this Settlement Agreement, including billings for Future Response Costs, they shall notify EPA in writing of their objection(s) within 10 (ten) days after such action, unless the objection(s) has/have been resolved informally. EPA and Respondents shall have 14 (fourteen) days from EPA's receipt of Respondents' written objection(s) to resolve the dispute (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of EPA. Such extension may be granted verbally but must be confirmed in writing.

74. Any agreement reached by the Parties pursuant to this Section shall be in writing and shall, upon signature by the Parties, be incorporated into and become an enforceable part of this Settlement Agreement. If the Parties are unable to reach an agreement within the Negotiation Period, an EPA management official at the Office of Remediation & Restoration Branch Chief level or higher will issue a written decision. EPA's decision shall be incorporated into and become an enforceable part of this Settlement Agreement. Respondents' obligations under this Settlement Agreement shall not be tolled by submission of any objection for dispute resolution under this Section. Following resolution of the dispute, as provided by this Section, Respondents shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with EPA's decision, whichever occurs, and regardless of whether Respondents agree with the decision.

XVI. STIPULATED PENALTIES

75. Respondents shall be liable to EPA for stipulated penalties in the amounts set forth in Paragraphs 76 and 77 for failure to comply with any of the requirements of this Settlement Agreement specified below unless excused under Section XVII (Force Majeure). "Compliance" by Respondents shall include completion of the Work under this Settlement Agreement or any activities contemplated under any OU 2 RI/FS Work Plan or other plan approved under this Settlement Agreement identified below, in accordance with all applicable requirements of law, this Settlement Agreement, the SOW, and any plans or other documents approved by EPA pursuant to this Settlement Agreement and within the specified time schedules established by and approved under this Settlement Agreement.

76. Stipulated Penalty Amounts – Major Violations.

a. The following stipulated penalties shall accrue per day for any noncompliance, including but not limited to failure to submit timely or adequate deliverables, except for any non-compliance specifically identified in Paragraph 77:

Penalty Per Violation Per Day	Period of Noncompliance

$ 1,500	1st through 14th day
$ 3,000	15th through 30th day
$ 5,000	31st day and beyond

77. Stipulated Penalty Amounts – Minor Violations.

a. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate quarterly progress reports as required by Paragraph 51:

Penalty Per Violation Per Day	Period of Noncompliance
$ 1,000	1st through 14th day
$ 1,500	15th day and beyond.

78. In the event that EPA assumes performance of a portion or all of the Work pursuant to Paragraph 95 (Work Takeover), Respondents shall be liable for a stipulated penalty in the amount of $250,000.

79. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: (a) with respect to a deficient submission under Section X (EPA Approval of Plans and Other Submissions), during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies Respondents of any deficiency; and (b) with respect to a decision by the EPA management official designated in Paragraph 74 of Section XV (Dispute Resolution), during the period, if any, beginning on the 21st day after the Negotiation Period begins until the date that the EPA management official issues a final decision regarding such dispute. Nothing in this Settlement Agreement shall prevent the simultaneous accrual of separate penalties for separate violations of this Settlement Agreement.

80. Following EPA's determination that Respondents have failed to comply with a requirement of this Settlement Agreement, EPA may give Respondents written notification of the same and describe the noncompliance. EPA may send Respondents a written demand for the payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified Respondents of a violation.

81. All penalties accruing under this Section shall be due and payable to EPA within 30 days after Respondents' receipt from EPA of a demand for payment of the penalties, unless Respondents invoke the dispute resolution procedures under Section XV (Dispute Resolution). Respondents shall make all payments required by this Paragraph to EPA by Fedwire Electronic Funds Transfer to:

Federal Reserve Bank of New York
ABA = 021030004

Account = 68010727
SWIFT address = FRNYUS33
33 Liberty Street
New York NY 10045
Field Tag 4200 of the Fedwire message should read "D 68010727 Environmental Protection Agency"

and shall reference stipulated penalties, Site/Spill ID Number 0130, and the EPA docket number for this action. At the time of payment, Respondents shall send notice that payment has been made as provided in Paragraph 89.b below.

82. The payment of penalties shall not alter in any way Respondents' obligation to complete performance of the Work required under this Settlement Agreement.

83. Penalties shall continue to accrue as provided in Paragraph 79 during any dispute resolution period, but need not be paid until 15 days after the dispute is resolved by agreement or by receipt of EPA's decision.

84. If Respondents fail to pay stipulated penalties when due, EPA may institute proceedings to collect the penalties, as well as Interest. Respondents shall pay Interest on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to Paragraph 81.

85. Nothing in this Settlement Agreement shall be construed as prohibiting, altering, or in any way limiting the ability of EPA to seek any other remedies or sanctions available by virtue of Respondents' violation of this Settlement Agreement or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(*l*) of CERCLA, 42 U.S.C. § 9622(*l*), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Provided, however, that EPA shall not seek civil penalties pursuant to Section 122(*l*) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided in this Settlement Agreement, except in the case of willful violation of this Settlement Agreement or in the event that EPA assumes performance of a portion or all of the Work pursuant to Section XX (Reservation of Rights by EPA), Paragraph 95. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Settlement Agreement.

XVII. FORCE MAJEURE

86. Respondents agree to perform all requirements of this Settlement Agreement within the time limits established under this Settlement Agreement, unless the performance is delayed by a *force majeure*. For purposes of this Settlement Agreement, *force majeure* is defined as any event arising from causes beyond the control of Respondents or of any entity controlled by Respondents, including but not limited to their contractors and subcontractors, which delays or prevents performance of any obligation under this Settlement Agreement despite Respondents' best efforts to fulfill the obligation. *Force majeure* does not include financial inability to complete the Work or increased cost of performance.

87. If any event occurs or has occurred that may delay the performance of any obligation under this Settlement Agreement, whether or not caused by a *force majeure* event, Respondents shall notify EPA orally within forty-eight (48) hours of when Respondents first knew that the event might cause a delay. Within 5 (five) days thereafter, Respondents shall provide to EPA in writing an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Respondents' rationale for attributing such delay to a *force majeure* event if they intend to assert such a claim; and a statement as to whether, in the opinion of Respondents, such event may cause or contribute to an endangerment to public health, welfare, or the environment. Failure to comply with the above requirements shall preclude Respondents from asserting any claim of *force majeure* for that event for the period of time of such failure to comply and for any additional delay caused by such failure.

88. If EPA agrees that the delay or anticipated delay is attributable to a *force majeure* event, the time for performance of the obligations under this Settlement Agreement that are affected by the *force majeure* event will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a *force majeure* event, EPA will notify Respondents in writing of its decision. If EPA agrees that the delay is attributable to a *force majeure* event, EPA will notify Respondents in writing of the length of the extension, if any, for performance of the obligations affected by the *force majeure* event.

XVIII. PAYMENT OF RESPONSE COSTS

89. Payments of Future Response Costs.

a. Respondents shall pay EPA all Future Response Costs not inconsistent with the NCP. On a periodic basis, EPA will send Respondents a bill requiring payment that includes an itemized cost summary, which includes direct and indirect costs incurred by EPA, its contractors, and DOJ. Respondents shall make all payments within 30 days after receipt of each bill requiring payment, except as otherwise provided in Paragraph 91 of this Settlement Agreement. Payments shall be made to EPA by Fedwire Electronic Funds Transfer ("EFT") to:

Federal Reserve Bank of New York
ABA = 021030004
Account = 68010727
SWIFT address = FRNYUS33
33 Liberty Street
New York NY 10045
Field Tag 4200 of the Fedwire message should read "D 68010727 Environmental Protection Agency"

and shall reference Site/Spill ID Number 0130 and the EPA docket number for this action.

b. At the time of payment, Respondents shall send notice that payment has been made to Anna Krasko, and to the EPA Cincinnati Finance Office by email at Cinwd_acctsreceivable@epa.gov, or by mail to

EPA Cincinnati Finance Office
26 W. Martin Luther King Drive
Cincinnati, Ohio 45268

Such notice shall reference Site/Spill ID Number 0130 and the EPA docket number for this action.

c. The total amount to be paid by Respondents pursuant to Paragraph 89.a shall be deposited by EPA in the L&RR Superfund Site Special Account to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

90. Interest. If Respondents do not pay Future Response Costs within 30 days after Respondents' receipt of a bill, Respondents shall pay Interest on the unpaid balance. The Interest on unpaid Future Response Costs shall begin to accrue on the date of the bill and shall continue to accrue until the date of payment. If EPA receives a partial payment, Interest shall accrue on any unpaid balance. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondents' failure to make timely payments under this Section, including but not limited to, payments of stipulated penalties pursuant to Section XVI. Respondents shall make all payments required by this Paragraph in the manner described in Paragraph 89.

91. Respondents may contest payment of any Future Response Costs billed under Paragraph 89 if they determine that EPA has made a mathematical error or included a cost item that is not within the definition of Future Response Costs, or if they believe EPA incurred excess costs as a direct result of an EPA action that was inconsistent with a specific provision or provisions of the NCP. Such objection shall be made in writing within 30 days after receipt of the bill and must be sent to the EPA Remedial Project Manager. Any such objection shall specifically identify the contested Future Response Costs and the basis for objection. In the event of an objection, Respondents shall within the 30 day period pay all uncontested Future Response Costs to EPA in the manner described in Paragraph 89. Simultaneously, Respondents shall establish, in a duly chartered bank or trust company, an interest-bearing escrow account that is insured by the Federal Deposit Insurance Corporation, and remit to that escrow account funds equivalent to the amount of the contested Future Response Costs. Respondents shall send to the EPA Remedial Project Manager a copy of the transmittal letter and check paying the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Simultaneously with establishment of the escrow account, Respondents shall initiate the Dispute Resolution procedures in Section XV (Dispute Resolution). If EPA prevails in the dispute, within 5 days after the resolution of the dispute, Respondents shall pay the sums due (with accrued interest) to EPA in the manner described in Paragraph 89. If Respondents prevail concerning any aspect of the contested costs, Respondents

shall pay that portion of the costs (plus associated accrued interest) for which they did not prevail to EPA in the manner described in Paragraph 89. Respondents shall be disbursed any balance of the escrow account. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XV (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding Respondents' obligation to reimburse EPA for its Future Response Costs.

XIX. COVENANT NOT TO SUE BY EPA

92. In consideration of the actions that will be performed and the payments that will be made by Respondents under the terms of this Settlement Agreement, and except as otherwise specifically provided in this Settlement Agreement, EPA covenants not to sue or to take administrative action against Respondents pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for the Work and Future Response Costs. This covenant not to sue shall take effect upon the Effective Date and is conditioned upon the complete and satisfactory performance by Respondents of all obligations under this Settlement Agreement, including, but not limited to, payment of Future Response Costs pursuant to Paragraph 89 (Payment of Future Response Costs). This covenant not to sue extends only to Respondents and does not extend to any other person.

XX. RESERVATIONS OF RIGHTS BY EPA

93. Except as specifically provided in this Settlement Agreement, nothing in this Settlement Agreement shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants, or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing in this Settlement Agreement shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Settlement Agreement, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Respondents in the future to perform additional activities pursuant to CERCLA or any other applicable law.

94. The covenant not to sue set forth in Section XIX above does not pertain to any matters other than those expressly identified therein. EPA reserves, and this Settlement Agreement is without prejudice to, all rights against Respondents with respect to all other matters, including, but not limited to:

a. liability for failure by Respondents to meet a requirement of this Settlement Agreement;

b. liability for costs not included within the definition of Future Response Costs;

c. liability for performance of response action other than the Work;

d. criminal liability;

e. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

f. liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the Site; and

g. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site not paid as Future Response Costs under this Settlement Agreement.

95. Work Takeover. In the event EPA determines that Respondents have ceased implementation of any portion of the Work, are seriously or repeatedly deficient or late in their performance of the Work, or are implementing the Work in a manner that may cause an endangerment to human health or the environment, EPA may assume the performance of all or any portion of the Work as EPA determines necessary. Respondents may invoke the procedures set forth in Section XV (Dispute Resolution) to dispute EPA's determination that takeover of the Work is warranted under this Paragraph. Costs incurred by EPA in performing the Work pursuant to this Paragraph shall be considered Future Response Costs that Respondents shall pay pursuant to Section XVIII (Payment of Response Costs). Notwithstanding any other provision of this Settlement Agreement, EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

XXI. COVENANT NOT TO SUE BY RESPONDENTS

96. Respondents covenant not to sue and agree not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work, Future Response Costs, or this Settlement Agreement, including, but not limited to:

a. any direct or indirect claim for reimbursement from the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;

b. any claim arising out of the Work or arising out of the response actions for which the Future Response Costs have or will be incurred, including any claim under the United States Constitution, the Rhode Island Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, or at common law; or

c. any claim pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, Section 7002(a) of RCRA, 42 U.S.C. § 6972(a), or state law relating to the Work or payment of Future Response Costs.

97. Except as expressly provided in Paragraphs 100 (Claims Against De Micromis Parties), 102 (Claims Against *De Minimis* and Ability to Pay Parties), and 103 (Claims Against MSW Generators and Transporters), these covenants not to sue shall not apply in the event the United States brings a cause of action or issues an order pursuant to the reservations set forth in Section XX (Reservations of Rights by EPA), other than in Paragraph 94.a (liability for failure to meet a requirement of the Settlement Agreement) or 94.d (criminal liability), but only to the

extent that Respondents' claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

98. Respondents reserve, and this Settlement Agreement is without prejudice to, claims against the United States, subject to the provisions of Chapter 171 of Title 28 of the United States Code, and brought pursuant to any statute other than CERCLA or RCRA and for which the waiver of sovereign immunity is found in a statute other than CERCLA or RCRA, for money damages for injury or loss of property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the United States, as that term is defined in 28 U.S.C. § 2671, while acting within the scope of his or her office or employment under circumstances where the United States, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred. However, the foregoing shall not include any claim based on EPA's selection of response actions, or the oversight or approval of Respondents' plans, reports, other deliverables, or activities.

99. Nothing in this Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

100. Claims Against De Micromis Parties. Respondents agree not to assert any claims and to waive all claims or causes of action (including but not limited to claims or causes of action under Sections 107(a) or 113 of CERCLA) that they may have for all matters relating to the Site against any person where the person's liability to Respondents with respect to the Site is based solely on having arranged for disposal or treatment, or for transport for disposal or treatment, of hazardous substances at the Site, or having accepted for transport for disposal or treatment of hazardous substances at the Site, if all or part of the disposal, treatment, or transport occurred before April 1, 2001, and the total amount of material containing hazardous substances contributed by such person to the Site was less than 110 gallons of liquid materials or 200 pounds of solid materials.

101. The waiver in Paragraph 100 shall not apply with respect to any defense, claim, or cause of action that a Respondent may have against any person meeting the above criteria if such person asserts a claim or cause of action relating to the Site against such Respondent. This waiver also shall not apply to any claim or cause of action against any person meeting the above criteria if EPA determines:

a. that such person has failed to comply with any EPA requests for information or administrative subpoenas issued pursuant to Section 104(e) or 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) or 9622(e), or Section 3007 of RCRA, or has impeded or is impeding, through action or inaction, the performance of a response action or natural resource restoration with respect to the Site, or has been convicted of a criminal violation for the conduct to which this waiver would apply and that conviction has not been vitiated on appeal or otherwise; or

b. that the materials containing hazardous substances contributed to the Site by such person have contributed significantly, or could contribute significantly, either

individually or in the aggregate, to the cost of response action or natural resource restoration at the Site.

102. Claims Against *De Minimis* and Ability to Pay Parties. Respondents agree not to assert any claims and to waive all claims or causes of action (including but not limited to claims or causes of action under Sections 107(a) or 113 of CERCLA) that they may have for response costs relating to the Site against any person that has entered or in the future enters into a final Section 122(g) *de minimis* settlement, or a final settlement based on limited ability to pay, with EPA with respect to the Site as of the Effective Date. This waiver shall not apply with respect to any defense, claim, or cause of action that a Respondent may have against any person if such person asserts a claim or cause of action relating to the Site against such Respondent.

103. Claims Against MSW Generators and Transporters. Respondents agree not to assert any claims and to waive all claims or causes of action (including but not limited to claims or causes of action under Sections 107(a) or 113 of CERCLA) that they may have for all matters relating to the Site against any person where the person's liability to Respondents with respect to the Site is based solely on having arranged for disposal or treatment, or for transport for disposal or treatment, of MSW at the Site, if the volume of MSW disposed, treated, or transported by such person to the Site did not exceed 0.2 percent of the total volume of waste at the Site.

104. The waiver in Paragraph 103 shall not apply with respect to any defense, claim, or cause of action that a Respondent may have against any person meeting the above criteria if such person asserts a claim or cause of action relating to the Site against such Respondent. This waiver also shall not apply to any claim or cause of action against any person meeting the above criteria if EPA determines that: (a) the MSW contributed significantly or could contribute significantly, either individually or in the aggregate, to the cost of the response action or natural resource restoration at the Site; (b) the person has failed to comply with any information request or administrative subpoena issued pursuant to Section 104(e) or 122(e) of CERCLA, 42 U.S.C. § 9604(e) or § 9622(e), or Section 3007 of RCRA, 42 U.S.C. § 6927; or (c) the person impeded or is impeding, through action or inaction, the performance of a response action or natural resource restoration with respect to the Site.

XXII. OTHER CLAIMS

105. By issuance of this Settlement Agreement, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondents.

106. Except as expressly provided in Paragraphs 100 (Claims Against De Micromis Parties), 102 (Claims Against *De Minimis* and Ability to Pay Parties), and 103 (Claims Against MSW Generators and Transporters), and Section XIX (Covenant Not to Sue by EPA), nothing in this Settlement Agreement constitutes a satisfaction of or release from any claim or cause of action against Respondents or any person not a party to this Settlement Agreement, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages, and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

107. No action or decision by EPA pursuant to this Settlement Agreement shall give rise to any right to judicial review except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XXIII. EFFECT OF SETTLEMENT/CONTRIBUTION

108. Except as provided in Paragraphs 100 (Claims Against De Micromis Parties) 102 (Claims Against *De Minimis* and Ability to Pay Parties), and 103 (Claims Against MSW Generators and Transporters), nothing in this Settlement Agreement shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this Settlement Agreement. Except as provided in Section XXI (Covenant Not to Sue by Respondents), each of the Parties expressly reserves any and all rights (including, but not limited to, pursuant to Section 113 of CERCLA, 42 U.S.C. § 9613), defenses, claims, demands, and causes of action which each Party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a Party hereto. Nothing in this Settlement Agreement diminishes the right of the United States, pursuant to Section 113(f)(2) and (3) of CERCLA, 42 U.S.C. § 9613(f)(2)-(3), to pursue any such persons to obtain additional response costs or response action and to enter into settlements that give rise to contribution protection pursuant to Section 113(f)(2).

109. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), and that Respondents are entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), or as may be otherwise provided by law, for "matters addressed" in this Settlement Agreement. The "matters addressed" in this Settlement Agreement are the Work and Future Response Costs. The Parties further agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B), pursuant to which Respondents have, as of the Effective Date, resolved their liability to the United States for the Work and Future Response Costs.

110. Each Respondent shall, with respect to any suit or claim brought by it for matters related to this Settlement Agreement, notify EPA in writing no later than 60 days prior to the initiation of such suit or claim. Each Respondent also shall, with respect to any suit or claim brought against it for matters related to this Settlement Agreement, notify EPA in writing within 10 days after service of the complaint or claim upon it. In addition, each Respondent shall notify EPA within 10 days after service or receipt of any Motion for Summary Judgment and within 10 days after receipt of any order from a court setting a case for trial, for matters related to this Settlement Agreement.

111. In any subsequent administrative or judicial proceeding initiated by EPA, or by the United States on behalf of EPA, for injunctive relief, recovery of response costs, or other relief relating to the Site, Settling Parties shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, *res judicata*, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised in the subsequent proceeding were or should have been brought in the instant case; provided, however,

that nothing in this Paragraph affects the enforceability of the covenant by EPA set forth in Section XIX.

112. Effective upon signature of this Settlement Agreement by a Respondent, such Respondent agrees that the time period commencing on the date of its signature and ending on the date EPA receives from such Respondent the payment(s) required by Section XVIII (Payment of Response Costs) and, if any, Section XVI (Stipulated Penalties) shall not be included in computing the running of any statute of limitations potentially applicable to any action brought by the United States related to the "matters addressed" as defined in Paragraph 109 and that, in any action brought by the United States related to the "matters addressed," such Respondent will not assert, and may not maintain, any defense or claim based upon principles of statute of limitations, waiver, laches, estoppel, or other defense based on the passage of time during such period. If EPA gives notice to Respondents that it will not make this Settlement Agreement effective, the statute of limitations shall begin to run again commencing ninety days after the date such notice is sent by EPA.

XXIV. INDEMNIFICATION

113. Respondents shall indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees, and representatives from any and all claims or causes of action arising from, or on account of negligent or other wrongful acts or omissions of Respondents, their officers, directors, employees, agents, contractors, subcontractors, and representatives in carrying out actions pursuant to this Settlement Agreement. In addition, Respondents agree to pay the United States all costs incurred by the United States, including but not limited to attorneys' fees and other expenses of litigation and settlement, arising from or on account of claims made against the United States based on negligent or other wrongful acts or omissions of Respondents, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Settlement Agreement. The United States shall not be held out as a party to any contract entered into by or on behalf of Respondents in carrying out activities pursuant to this Settlement Agreement. Neither Respondents nor any such contractor shall be considered an agent of the United States.

114. The United States shall give Respondents notice of any claim for which the United States plans to seek indemnification pursuant to this Section and shall consult with Respondents prior to settling such claim.

115. Respondents waive all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between any one or more of Respondents and any person for performance of Work on or relating to the Site. In addition, Respondents shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of Respondents and any person for performance of Work on or relating to the Site.

XXV. INSURANCE

116. At least seven (7) days prior to commencing any on-Site Work under this Settlement Agreement, Respondents shall secure, and shall maintain for the duration of this Settlement Agreement, commercial general liability insurance and automobile insurance with limits of five million dollars ($5,000,000), combined single limit, naming the EPA as an additional insured with respect to all liability arising out of the activities performed by or on behalf of Respondents pursuant to this Settlement Agreement. Within the same period, Respondents shall provide EPA with certificates of such insurance and a copy of each insurance policy. Respondents shall submit such certificates and copies of policies each year on the anniversary of the Effective Date. In addition, for the duration of the Settlement Agreement, Respondents shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Respondents in furtherance of this Settlement Agreement. If Respondents demonstrate by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then Respondents need provide only that portion of the insurance described above which is not maintained by such contractor or subcontractor.

XXVI. FINANCIAL ASSURANCE

117. Respondents shall include in the OU 2 RI/FS Work Plan submitted pursuant to the SOW a proposed estimate of the total cost of carrying out the Work ("Estimated Cost of the Work"). Within 30 days of EPA's approval of the OU 2 RI/FS Work Plan, Respondents shall establish and maintain financial security for the benefit of EPA in the amount of the Estimated Cost of the Work in one or more of the following forms, in order to secure the full and final completion of Work by Respondents:

a. a surety bond unconditionally guaranteeing payment and/or performance of the Work;

b. one or more irrevocable letters of credit, payable to or at the direction of EPA, issued by financial institution(s) acceptable in all respects to EPA equaling the total Estimated Cost of the Work;

c. a trust fund administered by a trustee acceptable in all respects to EPA;

d. a policy of insurance issued by an insurance carrier acceptable in all respects to EPA, which ensures the payment and/or performance of the Work;

e. a written guarantee to pay for or perform the Work provided by one or more parent companies of Respondents, or by one or more unrelated companies that have a substantial business relationship with at least one of Respondents, including a demonstration that any such guarantor company satisfies the financial test requirements of 40 C.F.R. § 264.143(f); and/or

f. a demonstration of sufficient financial resources to pay for the Work made by one or more of Respondents, which shall consist of a demonstration that any such Respondent satisfies the requirements of 40 C.F.R. § 264.143(f).

118. Any and all financial assurance instruments provided pursuant to this Section shall be in form and substance satisfactory to EPA, determined in EPA's sole discretion. In the event that EPA determines at any time that the financial assurances provided pursuant to this Section (including, without limitation, the instrument(s) evidencing such assurances) are inadequate, Respondents shall, within 30 days after receipt of notice of EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 117, above. In addition, if at any time EPA notifies Respondents that the anticipated cost of completing the Work has increased, then, within 30 days after such notification, Respondents shall obtain and present to EPA for approval a revised form of financial assurance (otherwise acceptable under this Section) that reflects such cost increase. Respondents' inability to demonstrate financial ability to complete the Work shall in no way excuse performance of any activities required under this Settlement Agreement.

119. If Respondents seek to ensure completion of the Work through a guarantee pursuant to Paragraph 117.e or 117.f, Respondents shall (a) demonstrate to EPA's satisfaction that the guarantor satisfies the requirements of 40 C.F.R. § 264.143(f); and (b) resubmit sworn statements conveying the information required by 40 C.F.R. § 264.143(f) annually, on the anniversary of the Effective Date, or such other date as agreed by EPA, to EPA. For the purposes of this Settlement Agreement, wherever 40 C.F.R. § 264.143(f) references "sum of current closure and post-closure costs estimates and the current plugging and abandonment costs estimates," the dollar amount to be used in the relevant financial test calculations shall be the EPA approved cost estimate for the Work at the Site plus any other RCRA, CERCLA, TSCA, or other federal environmental obligations financially assured by the relevant Respondent or guarantor to EPA by means of passing a financial test.

120. If, after the Effective Date, Respondents can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 117 of this Section, Respondents may, on any anniversary date of the Effective Date, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining Work to be performed. Respondents shall submit a proposal for such reduction to EPA, in accordance with the requirements of this Section, and may reduce the amount of the security after receiving written approval from EPA. In the event of a dispute, Respondents may seek dispute resolution pursuant to Section XV (Dispute Resolution). Respondents may reduce the amount of security in accordance with EPA's written decision resolving the dispute.

121. Respondents may change the form of financial assurance provided under this Section at any time, upon notice to and prior written approval by EPA, provided that EPA determines that the new form of assurance meets the requirements of this Section. In the event of a dispute, Respondents may change the form of the financial assurance only in accordance with the written decision resolving the dispute.

XXVII. INTEGRATION/APPENDICES

122. This Settlement Agreement and its appendices and any deliverables, technical memoranda, specifications, schedules, documents, plans, reports (other than progress reports), etc. that will be developed pursuant to this Settlement Agreement and become incorporated into and enforceable under this Settlement Agreement constitute the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Settlement Agreement. The Parties acknowledge that there are no representations, agreements, or understandings relating to the settlement other than those expressly contained in this Settlement Agreement. This Settlement Agreement does not terminate, supersede, broaden, expand or modify any obligations or work requirements under the Consent Decree entered for the Site, which is described in Paragraph 32. The following appendices are attached to and incorporated into this Settlement Agreement:

"Appendix A" is the list of Respondents.

"Appendix B" is the map of the approximate edge of the waste management area at the Site.

"Appendix C" is the map of the Site

"Appendix D" is the SOW.

XXVIII. ADMINISTRATIVE RECORD

123. EPA will determine the contents of the administrative record file for selection of the remedial action. Respondents shall submit to EPA documents developed during the course of the OU 2 RI/FS upon which selection of the response action may be based. Upon request of EPA, Respondents shall provide copies of plans, task memoranda for further action, quality assurance memoranda and audits, raw data, field notes, laboratory analytical reports, and other reports. Upon request of EPA, Respondents shall additionally submit any previous studies conducted under state, local, or other federal authorities relating to selection of the response action, and all communications between Respondents and state, local, or other federal authorities concerning selection of the response action. At EPA's discretion, Respondents shall establish a community information repository at or near the Site, to house one copy of the administrative record.

XXIX. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

124. This Settlement Agreement shall be effective five (5) days after the Settlement Agreement is signed by the Director of the Office of Site Remediation and Restoration or her delegate. This Settlement Agreement may be amended by mutual agreement of EPA and Respondents. Amendments shall be in writing and shall be effective when signed by EPA. EPA Remedial Project Managers do not have the authority to sign amendments to the Settlement Agreement.

125. No informal advice, guidance, suggestion, or comment by the EPA Remedial Project Manager or other EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondents shall relieve Respondents of their obligation to

obtain any formal approval required by this Settlement Agreement, or to comply with all requirements of this Settlement Agreement, unless it is formally modified.

XXX. NOTICE OF COMPLETION OF WORK

126. When EPA determines that all Work has been fully performed in accordance with this Settlement Agreement, with the exception of any continuing obligations required by this Settlement Agreement, including but not limited to payment of Future Response Costs and record retention, EPA will provide written notice to Respondents. If EPA determines that any Work has not been completed in accordance with this Settlement Agreement, EPA will notify Respondents, provide a list of the deficiencies, and require that Respondents modify the OU 2 RI/FS Work Plan if appropriate in order to correct such deficiencies, in accordance with Paragraph 48 (Modification of the OU 2 RI/FS Work Plan). Failure by Respondents to implement the approved modified OU 2 RI/FS Work Plan shall be a violation of this Settlement Agreement.

Agreed this 10 day of AUGUST, 2015.

For Respondent, Avnet, Inc. (including liability of Miller Electric Co. and Carol Cable Company)

By: _____

Title: ATTORNEY FOR AVNET, INC.

Agreed this 4th day of August, 2015.

For Respondent, Bixby International Corporation

By: _____
Daniel S. Rocconi

Title: President & CEO

Agreed this 31st day of July, 2015.

For Respondent, Clean Harbors of Braintree, Inc., f/k/a Recycling Industries, Inc.

By: _____

Title: Assistant Secretary

Agreed this 3rd day of August, 2015.

For Respondent, Corning Incorporated

By: Thomas G. Capek

Title: Vice President and Chief Engineer

Agreed this 31 day of July, 2015.

For Respondent, Electric Boat Corporation, f/k/a General Dynamics Corporation/Electric Boat Division

By: _____
Jeffrey S. Geiger

Title: President

Agreed this 27 day of July, 2015.

For Respondent, KIK Custom Products, Inc., f/k/a CCL Custom Manufacturing, Inc., f/k/a Peterson Puritan Inc.

By: _____

Title: EVP, General Counsel & Sec.

Agreed this 6th day of August, 2015.

For Respondent, Landfill & Resource Recovery, Inc.

By: Its owners in interest
FA CONSULTING LLC

Title: By: David J Wilson
Its: Member

By Charles S Wilson
Its: Member

Agreed this 30 day of July, 2015.

For Respondent, Life Technologies Corporation, as successor to Invitrogen Corporation and Dexter Corporation

By: _____

Title: VICE PRESIDENT - RISK MANAGEMENT

Agreed this 4 day of August, 2015.

For Respondent, Narragansett Electric Company d/b/a National Grid (USA), Inc.

By: Paul Willard KHG

Title: Authorized Representative

Agreed this 3 day of August, 2015.

For Respondent, NSTAR Electric Company d/b/a Eversource Energy (f/k/a Boston Edison Company)

By: _____

Title: Vice President, SC, EA+PM

Agreed this 4TH day of AUGUST, 2015.

For Respondent, Olin Corporation

By: Curtis M Richards

Title: CORP VP - EH+S

7/27/15

Agreed this 27 day of July, 2015.

For Respondent, SPX Corporation, successor to United Dominion Industries, Inc. (f/k/a AMCA International Corporation), for itself and Continental Screw Company

By: Allan E. Flores of Nixon Peabody LLP

Title: Appointed Counsel

Agreed this 29th day of July, 2015.

For Respondent, Stanley-Bostitch, Inc.

By: Debi J. Meyer

Title: VICE PRESIDENT EHS

Agreed this 6th day of August, 2015.

For Respondent, TA Consulting, LLC

By: David J. Wilson

Title: Member

By Charles S Wilson
Member

Agreed this 3 day of August, 2015.

For Respondent, Waste Management of Massachusetts, Inc.

By: _____
Stephen T. Joyce

Title: Area Director - CSMG

Agreed this 3 day of August, 2015.

For Respondent, Waste Management of Rhode Island, Inc.

By: Stephen T. Joyce

Stephen T. Joyce

Title: Area Director - CSMG

Agreed this 6th day of August, 2015.

For Respondent, Charles S. Wilson

By: Charles S Wilson

Title: _____

Agreed this 6th day of August, 2015.

For Respondent, David J. Wilson

By: David J. Wilson

Title: _____

It is so ORDERED AND AGREED this 10th day of August, 2015.

BY: _____ DATE: 08/10/15

Nancy Barmakian, Acting Director
Office of Site Remediation and Restoration
U.S. Environmental Protection Agency, Region 1

EFFECTIVE DATE: 08/17/15

ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT FOR REMEDIAL INVESTIGATION/ FEASIBILITY STUDY

LANDFILL & RESOURCE RECOVERY SUPERFUND SITE OPERABLE UNIT 2

APPENDIX A
LIST OF RESPONDENTS

L&RR Landfill Superfund Site
Administrative Settlement Agreement and Order On Consent For RI/FS
Operable Unit 2

List of Respondents

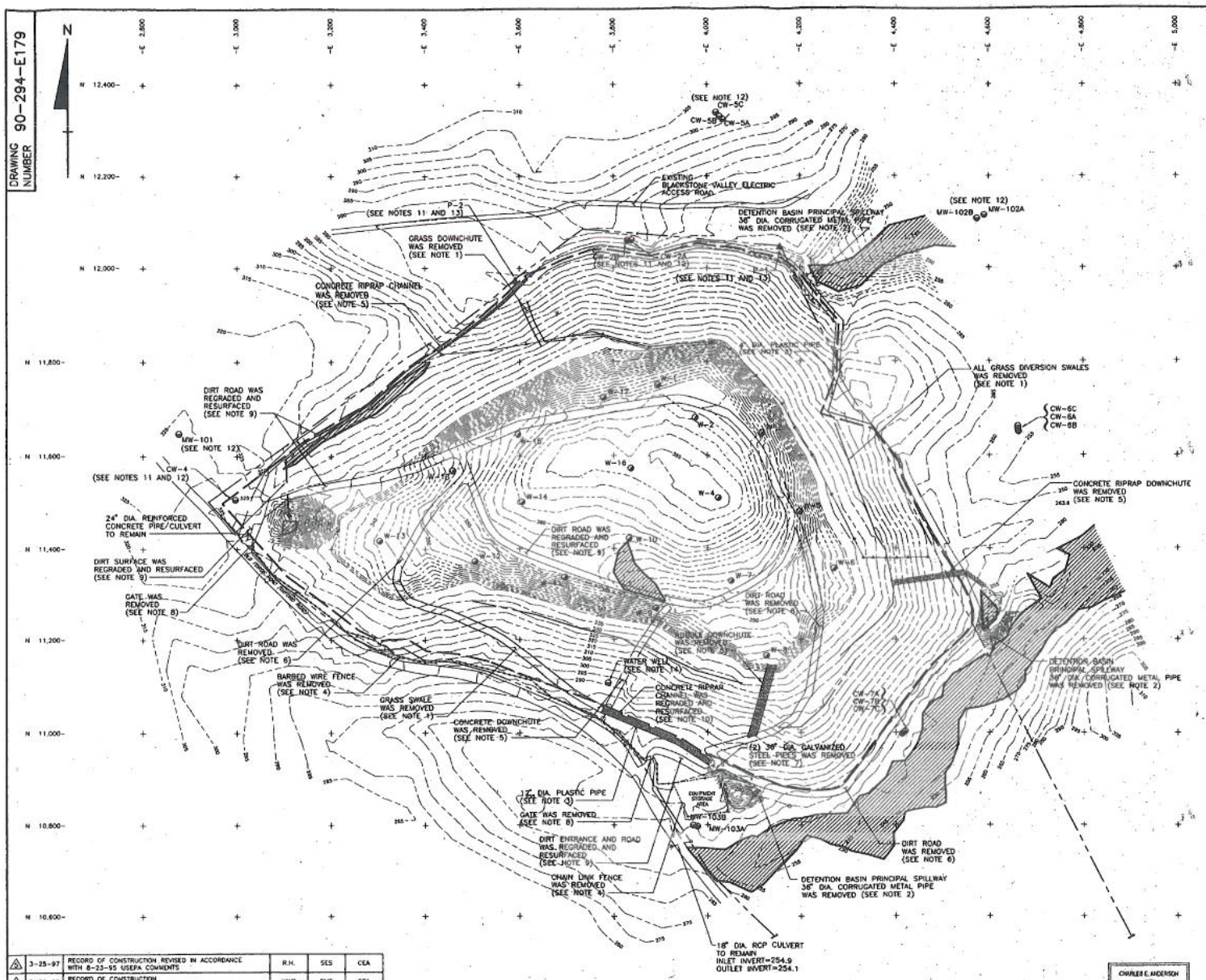
Avnet, Inc. (including liability of Miller Electric Co. and Carol Cable Company)
Bixby International Corporation
Clean Harbors of Braintree, Inc., f/k/a Recycling Industries, Inc.
Corning Incorporated
Electric Boat Corporation, f/k/a General Dynamics Corporation/Electric Boat Division
KIK Custom Products, Inc., f/k/a CCL Custom Manufacturing, Inc., f/k/a Peterson/Puritan Inc.
Landfill & Resource Recovery, Inc.
Life Technologies Corporation, successor to Invitrogen Corporation and Dexter Corporation
Narragansett Electric Company d/b/a National Grid (USA), Inc.
NSTAR Electric Company d/b/a Eversource Energy (f/k/a Boston Edison Company)
Olin Corporation
SPX Corporation, successor to United Dominion Industries, Inc.(f/k/a AMCA International Corporation), for itself and Continental Screw Company
Stanley-Bostitch, Inc.
TA Consulting, LLC
Waste Management of Massachusetts, Inc.
Waste Management of Rhode Island, Inc.
Wilson, Charles S.
Wilson, David J.

ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT FOR REMEDIAL INVESTIGATION/ FEASIBILITY STUDY

LANDFILL & RESOURCE RECOVERY SUPERFUND SITE OPERABLE UNIT 2

APPENDIX B
MAP OF THE APPROXIMATE EDGE OF THE WASTE MANAGEMENT AREA AT THE SITE

DRAWING NUMBER 90-294-E179



LEGEND:

- WETLANDS DELINEATED BY NORMANDEAU ASSOCIATES, MAY 1993
- PROPERTY LINE
- EXISTING CONTOUR
- CHAIN LINK FENCE
- BARBED WIRE FENCE
- GRASS DIVERSION SWALE
- LIMIT OF EXISTING 20 mil PVC GEOMEMBRANE COVER AS LOCATED BY OWNER
- APPROXIMATE LIMIT OF WASTE
- W-16 LANDFILL GAS WELL
- CW-5A GROUND WATER MONITORING WELL
- P-1 EXISTING PIEZOMETER
- ELECTRIC POLE

NOTES:

1. GRASS DOWNCHUTE, SWALE, AND ALL DIVERSION SWALES WERE FILLED IN TO MATCH SURROUNDING TERRAIN.
2. 36" DIA. CORRUGATED METAL PIPE CULVERT AND INLET STRUCTURE WERE REMOVED.
3. THE INLET OF ANY BURIED SOLID PLASTIC PIPE WAS CAPPED.
4. ALL EXISTING 3-STRAND BARBED WIRE FENCE WAS REMOVED.
5. CONCRETE AND RIPRAP DOWNCHUTES AND CHANNEL WERE REMOVED AND MATERIALS WERE USED AS COMMON FILL.
6. DIRT ROADS WERE SCARIFIED TO A DEPTH OF 6" AND WERE FILLED TO MATCH EXISTING TERRAIN.
7. 36" DIA. GALVANIZED STEEL PIPE CULVERTS WERE REMOVED.
8. ALL GATES WERE REMOVED.
9. DIRT ROADS AND ENTRANCES WERE REGRADED AND RESURFACED.
10. CONCRETE RIPRAP CHANNEL WERE FILLED AND RESURFACED.
11. EXISTING GROUND WATER MONITORING WELLS AND PIEZOMETERS WERE ABANDONED.
12. EXISTING GROUND WATER MONITORING WELLS MW-101, MW-102A, MW-102B, CW-2A, CW-2B, CW-4, CW-5A, CW-5B, AND CW-5C ARE SHOWN IN THEIR APPROXIMATE LOCATIONS.
13. EXISTING PIEZOMETERS P-1 AND P-2 ARE SHOWN IN THEIR APPROXIMATE LOCATIONS.
14. EXISTING WATER WELL SHOWN IN ITS APPROXIMATE LOCATION WERE ABANDONED.

SCALE
100 0 100 200 FEET

RECORD OF CONSTRUCTION MAY 1994 SITE CONDITIONS AND DEMOLITION PLAN L&RR SUPERFUND SITE NORTH SMITHFIELD, RHODE ISLAND

PREPARED FOR

THE L&RR GROUP

SMITH

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
4	3-25-97	RECORD OF CONSTRUCTION REVISED IN ACCORDANCE WITH 8-23-95 USEPA COMMENTS	R.H.	SES	CEA
3	5-29-95	RECORD OF CONSTRUCTION	WWB	EMS	CEA
2	5-3-94	REISSUED FOR 100% DESIGN	M_A_M	T.M.J	C.E.A
1	3-1-94	REISSUED FOR 95% DESIGN	WLH	T.M.J.	T.M.J.
0	12-22-93	ISSUED FOR 95% DESIGN	J.M.R./WLH	V.B.P.	T.M.J.

REFERENCE:
- TOPOGRAPHIC DATA AND LOCATIONS BASED ON INFORMATION SUPPLIED BY LOUIS FEDERICI & ASSOCIATES 235 PROMENADE STREET, PROVIDENCE RHODE ISLAND DRAWING No. 901102-02 DATE: JANUARY 14, 1991, SCALE : 1"=40'-0"

CHARLES E. ANDERSON NO. 6140 REGISTERED PROFESSIONAL ENGINEER

Charles E. Anderson

DATE:	7-12-93	SHEET 2 of 35	DRAWING NUMBER 90-294-E179	4
SCALE:	AS SHOWN			

E:\PROJECTS\90294\E179 Thu Apr 20 09:50:54 1997

ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT FOR REMEDIAL INVESTIGATION/ FEASIBILITY STUDY

LANDFILL & RESOURCE RECOVERY SUPERFUND SITE OPERABLE UNIT 2

APPENDIX C
MAP OF THE SITE

MAP	Lot	Owner
4	447	Town of North Smithfield
7	2 (Portion)	Holliston Sand Company, Inc.
7	3 (Portion)	Slater Farms, LLC
7	9	Landfill & Resource Recovery, Inc. (Charles Wilson)
7	9A	Landfill & Resource Recovery, Inc. (Charles Wilson)
7	10	Charles Wilson
7	11	Charles Wilson
7	15	William King
7	23	Doris & Alfred Caron
7	24	Sandra & Alfred Caron
7	66	Slater Homes, LLC (Condominium Units 1301 - 1325)
7	67	TA Consulting LLC (David Wilson)
7	68	Charles Wilson
7	70	Rochelle White
7	81-83 88-90	Narragansett Electric Company (D/B/A National Grid)

Legend

Locations

- Monitoring Well
- Monitoring Well Sampled for 1,4-Dioxane via Method 8260 LL-SIM
- Piezometer
- Residential Well
- GeoprobeGW
- Borehole
- Waterloo Profile
- Surface Water
- Powerlines
- Roads
- Parcel Boundaries (Drawing C-01)

Notes
1. All well locations as shown are approximate.
2. Locations of residential wells are approximated based on observations made during sampling.
3. Parcel ownership information based on the North Smithfield, RI Assessors Online Database powered by Vision Government Solutions, Inc.
4. Geoprobe groundwater sampling locations installed by O&M, Inc. in December 2005. Approximate locations based on Figure 2 of "Landfill Resource and Recovery (L&RR) Superfund Site Results for the Groundwater Geoprobe Sampling Points" dated June 12, 2006.
5. Parcel Boundaries (Drawing C-01) from May 2012 Existing Site Plan and do not reflect on-the-ground accuracy.

L&RR Landfill Site
North Smithfield, Rhode Island

Site Plan

FIGURE 1

SCALE: 1" = 300'	DOC: Site Plan.MXD
DATE: July 2014	JOB NO.: 224283.14
DRAWN BY: CJT	SOURCE: ESRI

ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT FOR REMEDIAL INVESTIGATION / FEASIBILITY STUDY

LANDFILL & RESOURCE RECOVERY SUPERFUND SITE OPERABLE UNIT 2

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STATEMENT OF WORK
OPERABLE UNIT 2 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
LANDFILL & RESOURCE RECOVERY SUPERFUND SITE

A. RI/FS OBJECTIVES, REPORTING REQUIREMENTS, AND SCHEDULE

This section describes the overall objectives, reports and schedule of the Operable Unit 2 ("OU 2") Remedial Investigation and Feasibility Study ("RI/FS") process. Subsequent sections will describe the separate phases of the process in more detail. This Scope of Work ("SOW") is Appendix D to the Settlement Agreement for OU 2 RI/FS ("Settlement Agreement").

If EPA, after reasonable opportunity for review and comment by the Rhode Island Department of Environmental Management ("RIDEM"), determines that any of the objectives, reporting requirements or the schedule of this SOW are not fully met, then additional or revised work plans, studies or other appropriate submittals and/or activities shall be submitted, designed and performed by the Respondents until EPA, after reasonable opportunity for review and comment by RIDEM, determines that no further submittals or investigation are necessary to achieve the goals and intentions of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended ("CERCLA"). The approval process of all deliverables in the SOW shall be done pursuant to "Submissions Requiring EPA Approval" in the Settlement Agreement. The Respondents shall provide data and information in the SOW deliverables that conform to the format for tables required by Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents (EPA OSWER 9200.1-23PJuly 1999) ("ROD Guidance") and EPA Region 1 ROD Model.

The Respondents shall conduct all work and prepare all deliverables under this SOW to meet the requirements and objectives of the NCP, the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final (EPA/540/G-89/004, OSWER Directive 9355.3-01, October 1988), and this SOW.

A significant amount of Site data and other information have already been collected during prior environmental sampling and response activities performed by the Respondents, EPA, and RIDEM, including as part of the 2014 Fourth Five-Year Review Report for the Site. The Respondents shall compile available pre-existing data in order to avoid the duplication of previously completed efforts, and to maximize the efficiency of Remedial Investigation ("RI") data collection activities. Information and results from past investigations and response activities will be evaluated during the RI/FS process, and incorporated as necessary.

I. OBJECTIVES

The primary objective of the Remedial Investigation/Feasibility Study (RI/FS) shall be to assess site conditions and evaluate alternatives to the extent necessary to select an OU 2 remedy to address the Management of Migration (MOM) of Site contaminants from the capped landfill area at the Landfill & Resource Recovery Superfund Site (the "Site") as defined in the Settlement Agreement that shall be consistent with the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP") (40 CFR Part 300) and relevant guidance. The OU 2 Remedial Investigation ("RI") and OU 2 Feasibility Study ("FS") shall be conducted in such a way as to assist EPA's selection of an OU 2 remedy, consistent with EPA's Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA, Interim Final (EPA/540/G-89/004, OSWER Directive 9355.3-01 October 1988) and the NCP, among other authorities.

If, at any time during the RI/FS process, the Respondents propose and/or EPA determines that a groundwater engineering evaluation/cost analysis ("EE/CA") should be performed at the Site in preparation for a non-time critical removal action ("NTCRA"), the Respondents shall conduct an EE/CA concurrent with the RI/FS.

A. Remedial Investigation

The objectives of the RI, taking into consideration existing information regarding the Site, are to:

1. define the source(s), nature, extent, and distribution of contaminants released from the source into groundwater and other media

2. provide sufficient information for EPA to assess the current and potential future risks to human health and to the environment; and

3. provide sufficient information for EPA to evaluate remedial alternatives, conceptually design remedial actions, select an OU 2 remedy, and issue a record of decision.

The RI shall include, but is not limited to, data gathering (monitoring and testing), and developing methodologies, procedures, and assessments for characterizing the physical and chemical attributes of the Site.

The procedures used to address the objectives listed above may include, but are not limited to: evaluating all existing Site information; identifying data gaps; performing field sampling and laboratory analyses; performing investigation activities such as surface geophysics; conducting bench scale and/or field pilot studies; and consulting all available federal and state applicable or relevant and appropriate human health and environmental regulations and/or laws.

B. Feasibility Study

The objectives of the FS are to:

1. establish remedial action objectives and preliminary remediation goals (PRGs), as described in NCP § 300.430(e)(2)(i);

2. review the applicability of various remedial technologies, including innovative treatment technologies, to determine whether they are appropriate OU 2 remedies for the Site;

3. determine if each alternative developed by combining technologies is effective, by evaluating in the short- and long-term each alternative's:

    a. effectiveness,
    b. implementability, and
    c. cost;

4. evaluate each alternative or combination of alternatives that meets the above screening criteria, including no-action alternative, through a detailed and comparative analysis based upon the nine (9) NCP criteria; and

5. provide information for the RI to ensure that sufficient data of the appropriate type are gathered to select an OU 2 remedy based on the factors mentioned in the objectives listed above.

The FS includes, but is not limited to: conceptualizations, engineering analyses, cost analyses, and an analysis of time frames for the achievement of clean-up goals.

C. Engineering Evaluation/Cost Analysis

If an EE/CA is deemed to be appropriate, the objectives of the EE/CA(s) will be to:

1. identify the objectives of the specific groundwater removal action; and
2. analyze the effectiveness, implementability and cost of various alternatives that may satisfy these objectives.

II. REPORTING REQUIREMENTS

All data, methods, and interpretations must be:

A. scientifically and technically sound with relevant assumptions, biases, potential deficiencies, safety factors, and design criteria explicitly stated;

B. discussed with observations and interpretation clearly identifiable and distinguishable;

C. discussed with relevant supporting reference material clearly identified and included;

D. concisely illustrated and presented in graphs, charts, maps, plans and/or cross-sections where possible, so that the text provides a clear discussion of such illustrations;

E. linked to each and every objective for which they were completed and to which they are applicable; and

F. sufficient to satisfy the objectives of the OU 2 RI and FS listed above.

III. SCHEDULE OF DELIVERABLES

A. OU 2 RI/FS Phases

The Respondents shall perform the RI/FS as discussed in this section and as shown in Table 1. The integrated RI/FS process ensures an orderly selection of a remedy. Site data needed to perform the FS shall be identified as early as possible in the RI. However, the results of investigations during the RI/FS may require changes in the process.

The integrated RI/FS process is shown in Table 1.

The Respondents shall conduct a Baseline Human Health Risk Assessment and a Screening-Level Ecological Risk Assessment ("SLERA") and submit the corresponding Risk Assessment Reports. As part of the performance of the risk assessment task, a series of interim deliverables shall be submitted for EPA and RIDEM as described in SOW Section D.

B. OU 2 RI/FS Deliverables

Deliverables for each phase of the RI/FS are shown on Table 1. The actual number of deliverables may vary depending on:

1. the types of deliverables proposed by the Respondents and approved by EPA;

2. tasks within RI/FS phases, particularly the tasks planned for the scoping of the RI/FS;

3. revisions based on EPA and RIDEM review;

4. requests for additional field studies, analyses, and documentation by EPA or the Respondents;

5. the quality and completeness of the Respondents' work; and

6. the possible need to conduct a non-time critical removal action (NTCRA).

The Respondents shall provide EPA with 2 print copies and one electronic copy, and RIDEM with 2 print copies and one electronic copy, of each deliverable, unless otherwise directed by EPA. Upon request, Respondents shall also provide EPA and/or RIDEM with text and tables in MS Word, and provide data and drawings in workable and widely accepted electronic formats, or alternatively, provide EPA and RIDEM with access to electronic text, tables, data and drawings though a Virtual Private Network (VPN), File Transfer Protocol (FTP) or other acceptable electronic data-sharing link. Sampling and monitoring data should be submitted in standard Electronic Data Deliverable (EDD) format and be consistent with EPA National Geospatial Data Policy (August 2008).

C. OU 2 RI/FS Schedule

Initiation of the schedule for the Respondents to submit the Work Plan for the RI/FS shall begin on the Effective Date of the Settlement Agreement. Initiation of the other phases and components of the RI/FS shall be triggered by notice from EPA as stated in Table 1. EPA may give notice to start a component of the study, if appropriate, even if prior steps have not been completed.

The established schedule shall be included as a component of the RI/FS Work Plan. A copy of the project schedule with any proposed revisions shall be contained in each major deliverable of the RI/FS and a summary status provided in each progress report required by the Settlement Agreement.

TABLE 1 – SCHEDULE FOR OU 2 RI/FS PROCESS

PHASE	DELIVERABLES	DUE DATE
Scoping the RI/FS	RI/FS Work Plan, including Project Operations Plan ("POP")	12 weeks after the Effective Date of the Settlement Agreement
Remedial Investigation	RI Report	28 weeks after EPA approval of the RI/FS Work Plan
Screening-Level Ecological Risk Assessment (SLERA)	Draft SLERA Technical Memorandum and SLERA Meeting Notes	20 weeks after EPA approval of the RI/FS Work Plan
Risk Assessment	Baseline Human Health Risk Assessment Report and a SLERA Report or Baseline Ecological Risk Assessment Report, if required.	28 weeks after EPA approval of the RI/FS Work Plan (or as determined by EPA as part of the approval of the RI/FS Work Plan)
Feasibility Study	FS Report	16 weeks after EPA approval of the RI and Risk Assessment Reports (or as determined by EPA as part of the approval of these Reports)
EE/CA (if necessary) NTCRA - TBD	Engineering Evaluation and Cost Analysis Work Plan Engineering Evaluation and Cost Analysis Report	Engineering Evaluation and Cost Analysis Work Plan due 12 weeks after EPA notice to proceed with EE/CA.

Note: the term "approval," as used in Table 1 and in the rest of this SOW, shall encompass EPA's approval, conditional approval, or modifications after disapproval of submissions as described in Section X of the Settlement Agreement.

Note: the above schedule assumes a Baseline Ecological Risk Assessment will not be required. The schedule may be revised if a BERA is required by EPA.

B. SCOPING OF THE OU 2 RI/FS

I. OBJECTIVES

A significant amount of Site data and other information have already been collected during prior environmental sampling and response activities performed by the Respondents. As part of developing the RI/FS Work Plan, the Respondents shall compile all available pre-existing data relevant to the RI/FS, conduct a detailed review of such data, assess these data in terms of timeliness, and spatial and temporal adequacy, and address the usability of the data for the risk assessment.

The Respondents shall use the following guidance to provide the framework of the RI/FS studies: The Ground Water Technical Enforcement Guidance Document (OSWER Directive 9950, September 1986); Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites (OSWER Directive 9283.1-2, August 1988); A Guide on Remedial Actions for Contaminated Ground Water (OSWER Directive 9283.1-1FS, April 1989); Groundwater Remedy Completion Strategy (OSWER 9200.2-144 May, 2014); Groundwater Road Map Recommended Process for Restoring Contaminated Groundwater at Superfund Sites (OSWER 9283.1-34, July 2011); Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration (OSWER Directive 9283.1-33, June 2009); and Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action (OSWER/OSW publication EPA 530-R-04-030, Updated April 2004). The RI/FS work plan shall clearly show the relationship between the objectives and the studies to be performed. This work plan shall allow for the potential for additional work contingent on the results of the studies described in the RI/FS Work Plan.

The scoping of the RI/FS shall ensure that the Respondents:

A. understand the objectives of the RI/FS;

B. develop procedures to meet the RI/FS objectives, including those for field activities;

C. initiate the identification of federal and state Applicable or Relevant and Appropriate Requirements ("ARARs"), which shall provide criteria for remedy selection at the Site;

D. assemble and evaluate existing data, identifies data gaps, resolve inconsistencies, and fill in data gaps where necessary to determine the vertical and lateral extent of groundwater contamination and to accomplish RI objectives;

E. develop a conceptual understanding of the Site based on the evaluation of existing data and all newly acquired data (Conceptual Site Model "CSM");

F. identify remedial action objectives and likely response scenarios and potentially applicable technologies for the Site;

G. develop an estimate of the total cost of carrying out the RI/FS;

H. undertake data collection efforts or studies where this information will assist in scoping the RI/FS or accelerate response actions, and begin to identify the need for treatability studies, as appropriate;

I. identify the type, quality and quantity of the data needed to assess potential remedial technologies, to evaluate technologies that may be combined to form remedial alternatives, and to support decisions regarding remedial response activities;

J. prepare site-specific health and safety plans that shall specify, at a minimum, employee training and protective equipment, medical surveillance requirements, standard operation procedures, and a contingency plan that conforms with 29 CFR §§ 1910.120(1)(1) & (1)(2);

K. develop a Quality Assurance Project Plan and a Field Sampling Plan that shall provide a process for obtaining data of sufficient quality and quantity to satisfy data needs; and

L. draft the negotiated schedule which shows the flow of studies and the submission of deliverables.

The Respondents shall review the above scoping requirements and prepare an RI/FS Work Plan that addresses the remaining objectives to be evaluated. The requirements listed in the Project Operations Plans will apply to every Work Plan that involves field activities. The RI Report shall include a detailed discussion of the studies completed and how the data requirements of the RI have been satisfied.

II. DELIVERABLES

A. Overview

In scoping the RI/FS, the Respondents shall submit to EPA and RIDEM the following:

1. Project Operations Plan;
2. Preliminary Identification of Probable ARARs;
3. Data Requirements, including data requirements for Potential Remedial Alternatives and Technologies;
4. Expanded Schedule for the RI/FS;
5. Cost Estimate for the RI/FS; and
6. Any proposal for conducting an EE/CA.

Collectively, these documents are referred to as the RI/FS Work Plan in Table 1 and elsewhere in this document. The RI/FS Work Plan shall describe necessary studies to be done to complete the RI/FS, including:

1. updating the existing Site survey and Site base map;
2 soils and sources of contaminants as needed for the OU 2 RI, including a description of the locations of suspected contaminated areas and the areas considered to represent background levels;
3. subsurface and hydrogeological evaluations for overburden and bedrock, including specific drilling methods and protocols to be used;
4. groundwater sampling including types of analyses, number and schedule of samples, identification of proposed groundwater monitoring wells (including background locations);
5. surface water, porewater, and sediment sampling including sampling events during both low and high flow periods;
6. provision for determining how the field program shall be adjusted according to the initial sampling results;
7. ecological, wetland, and floodplain assessment;
8. pre-ROD monitoring and sampling; and

9. treatability and pilot studies.

To reduce the submittal of repetitive information contained within each of the elements of the Work Plan, the Respondents may include appropriate cross-references at key places within each document in addition to referencing existing documents developed for OU-1. The Respondents shall also evaluate and include relevant information from other regional, local, and early site-specific sources on geological and hydrogeological features, such as Geophysical Investigation of L&RR, E.C. Jordan Co., August 1987; Appendices for the L&RR RI/FS, Ebasco Services Inc., June 1988; MODFLOW groundwater model, Proposed Indeck-North Smithfield LLC Power Plant, North Smithfield, RI, GZA, August 1999; Evaluation of the GZA Groundwater Flow Model, Metcalf & Eddy, April 2000; Delineation of Areas Contributing Recharge to Selected Public-Supply Wells in Glacial Valley Fill and Wetland Settings, Rhode Island, USGS, 2004; Availability Of Ground Water In The Branch River Basin, Providence County, RI, USGS, December 1974; pumping tests and other information for the Tifft Rd Replacement Source Well (2004); and information related to the nearby Western Sand and Gravel Superfund Site.

B. Project Operations Plan

Before the initiation of field activities as part of the RI, several site-specific plans shall be written to establish procedures to be followed by the Respondents in performing field, laboratory, and analysis work and community and agency liaison activities. These site-specific plans include:

1. Site Management Plan ("SMP");
2. Sampling and Analysis Plan ("SAP"), consisting of a Quality Assurance Project Plan ("QAPP") and a Field Sampling Plan ("FSP");
3. Health and Safety Plan ("HSP"); and
4. Community Relations Support Plan ("CRSP").

The Respondents shall combine these plans into the Project Operations Plan ("POP"). The POP is part of the RI/FS Work Plan. The POP shall incorporate Respondents existing plans and procedures as appropriate for the RI/FS. The four components of the POP are discussed in the following Sections.

The Respondents shall modify the format and scope of each plan as needed to describe the sampling, analyses, and other activities that are determined to be needed as the RI/FS progresses. These activities may include on-site pilot studies

and/or laboratory bench scale studies of remedial technologies, and subsequent rounds of field sampling. EPA may modify the scope of these activities at any time during the RI/FS at the discretion of EPA in response to the evaluation of RI/FS results, changes in RI/FS requirements, and other developments or circumstances.

1. Site Management Plan ("SMP")

The overall objective of the Site Management Plan is to provide EPA and RIDEM with a written understanding and commitment of how various project aspects such as access, security, contingency procedures, management responsibilities, investigation-derived waste disposal, budgeting, and data handling are being managed by the Respondents. As part of the SMP, the Respondents shall include, at a minimum:

a. a map and list of properties, the names of the property owners, and the addresses and telephone numbers of owners to whose property access may be required;

b. a program for continuing sampling of nearby residential wells based on the objectives and scope of the program for sampling wells in 2014 and 2015;

c. a clear indication of the exclusion zone, contamination reduction zone, and clean area for on-site and off-site activities;

d. the status of any existing access agreements and provisions reflecting that access will be obtained to allow the Respondents to perform required sampling;

e. a provision for the security of government, Respondents', and private property at the Site;

f. measures, including a fence, to prevent unauthorized entry to the portions of the Site, which might result in exposure of persons to potentially hazardous conditions;

g. the location of an office for on-site activities, if required;

h. contingency and notification plans (for federal, state, and local authorities) for potentially dangerous activities associated with the RI/FS;

i. communication to EPA and RIDEM of the organization and management of the RI/FS, including key personnel and their roles and responsibilities;

j. a list of the categories of potential contractors and subcontractors to be hired by the Respondents (and their identities, if known) in the conduct of the RI/FS and a description of their activities and roles;

k. provision for the proper disposal of materials used and wastes derived during the RI/FS (e.g., drill cuttings, extracted groundwater, protective clothing, disposable equipment), which will be managed in accordance with the Guide to Management of Investigation-Derived Wastes (OSWER Directive 9345.3-03FS, January 1992) and/or alternate procedures approved by EPA. If applicable, these provisions shall be consistent with the off-site disposal aspects of CERCLA, RCRA, and applicable state laws. The Respondents, a representative of the Respondents, or another party acceptable to EPA shall be identified as the generator of wastes for the purpose of regulatory or policy compliance; and

l. procedures for organizing, analyzing, and presenting the data generated during the RI/FS. These procedures are expected to be consistent with the Respondents' existing data management tools for the Site, and shall include the description of the proposed computer database management system. To the degree possible, the database management parameters shall be compatible with data storage and analysis systems available to the current EPA Region 1 and RIDEM data storage and analysis system. EPA will advise the Respondents as to its specific system requirements early in the RI/FS process to determine if this can be accomplished.

2. Sampling and Analysis Plan ("SAP")

The purpose of the Sampling and Analysis Plan is to ensure that sampling and other data collection activities will be consistent with current sampling and analytical methodologies and will be comparable to and compatible with previous Respondents data collection activities performed at the Site while providing a mechanism for planning and approving field activities.

The overall objectives of the Sampling and Analysis Plan are as follows:

a. to document specific data quality objectives ("DQOs"), procedures, and rationales for field work and sample analytical work;

b. to provide a mechanism for planning and approving Site and laboratory activities;

c. to ensure that sampling and analysis activities are necessary and sufficient; and

d. to provide a common point of reference for all parties to ensure the comparability and compatibility of sampling and analysis activities to meet the stated project objectives.

The SAP shall be the framework of all anticipated field activities (e.g., sampling objectives, evaluation of existing data, standard operating procedures) and shall contain specific information on the field work (e.g., sampling locations and rationale, sample numbers and rationale, analyses of samples). During the RI/FS and the EE/CA, the SAP shall be revised as necessary to cover each round of field or laboratory activities.

The SAP consists of two parts: (1) a Quality Assurance Project Plan ("QAPP"), and (2) a Field Sampling Plan ("FSP"). The QAPP shall follow the requirements in QA/R-5 and the "EPA New England Quality Assurance Project Plan Guidance." The FSP shall contain all of the standard operating procedures ("SOPs") and other documentation to support specific sections of the QAPP. In some cases where there are unique FSP components for special applications, they will be added to the QAPP in the appropriate sections. In addition, the FSP and QAPP should be submitted as a single document (although they may be bound separately to facilitate use of the FSP in the field).

The SAP shall specify in the QAPP/FSP notification provisions that Respondents shall notify EPA and RIDEM two (2) weeks before initiation of each field sampling or monitoring activity. As it is recognized that sampling schedules may change due to a variety of reasons, weekly updates of the upcoming field activities will be provided as an e-mail to EPA and RIDEM once field work has commenced, in order to allow for the scheduling of regulatory oversight. The plan shall also allow split, replicate, or duplicate samples to be taken by EPA and/or RIDEM, with a minimum of forty-eight (48) hours advance notice to Respondents, when

possible.

Guidance on the topics covered in the QAPP and FSP and their integration into each of these plans and the integration of the QAPP and the FSP into the SAP can be found in the following references which shall be used to develop the SAP:

EPA Requirements for Quality Assurance Plans, EPA QA/R-5 (EPA/240/B-01/003, March 2001, reissued May 2006);

EPA Guidance for Quality Assurance Project Plans, QA/G-5 (EPA/240/R-02/009, December 2002);

EPA New England Quality Assurance Project Plan Program Guidance, (EQAQAPP-2005PG2, EPA NE QAPP Program, Revision 2, January 9, 2010);

Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final (OSWER Directive 9355.3-01, EPA/540/G-89/004, October 1988);

Guidance for the Data Quality Objectives Process, QA/G-4 (EPA/600/R-96/055, August 2000);

Guidance for Preparing Standard Operating Procedures (SOPs), EPA QA/G-6 (EPA/600/B-7/001 April 2007)/;

Multi-Media, Multi-Concentration Organics Analysis, SOM01.2, http://www.epa.gov/superfund/programs/clp/som1.htm

EPA-540-R-08-01, *USEPA* Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008 or most recent revision; http://www.epa.gov/superfund/programs/clp/guidance.htm#som

EPA-540-R-08-005, Guidance for Labelling Externally Validated Laboratory Analytical Data for Superfund Use, January 2009, http://www.epa.gov/superfund/programs/clp/guidance.htm#external;

EPA New England Environmental Data Review Program Guidance, 4/22/13, http://www.epa.gov/region1/oeme/index.html

EPA New England Data Review Supplement for Regional Data Review Elements and Superfund Guidance/Procedures, 4/22/13, http://www.epa.gov/region1/lab/qa/pdfs/EQAGUI-QSReportTemplate0.pdf

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Pub. SW-846, Third Edition, latest update); and

Guidance for Data Quality Assessment: Practical Methods for Data Analysis, EPA QA/G-9 (EPA/600/R-96-084, QA 97 Version, January 1998).

2a. Quality Assurance Project Plan ("QAPP")

The Quality Assurance Project Plan ("QAPP") shall document in writing the site-specific objectives, policies, organizations, functional activities, sampling and analysis activities, and specific quality assurance/quality control activities designed to achieve the DQOs of the RI/FS. The QAPP developed, including updates of previous Site documents, shall document quality control and quality assurance policies, procedures, routines, and specifications.

Project activities throughout the RI/FS shall comply with the QAPP. QAPP sampling and analysis objectives and procedures shall be consistent with EPA Requirements for Quality Assurance Plans, EPA QA/R-5 (EPA/240/B-01/003, March 2001, reissued May 2006), Guidance for Quality Assurance Project Plans, QA/G-5 (EPA/240/R-02/009 December 2002), and appropriate EPA handbooks, manuals, and guidelines, including EPA-New England Quality Assurance Project Plan Guidance, Revision 2, January 2010, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Pub. SW-846, Third Edition, latest update) (CLP Routine Analytical Services, RAS, latest Statement of Work or equivalent shall be used), Guidelines Establishing Test Procedures for the Analysis of Pollutants (40 CFR, Part 136), and Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air (EPA-600/4-84-041, April 1984).

All the QAPP elements identified in QA/R-5 and the Compendium must be addressed.

As indicated in QA/R-5 and the Compendium, a list of essential elements must be considered in the QAPP for the RI/FS. If a particular element is

not relevant to a project and therefore excluded from the QAPP, specific and detailed reasons for exclusion must be provided.

Information in a plan other than the QAPP may be cross-referenced clearly in the QAPP, provided that all objectives, procedures, and rationales in the documents are consistent, and the reference material fulfills requirements of QA/R-5. Examples of how this cross-reference might be accomplished can be found in the Guidance for the Data Quality Objectives Process (EPA/600/R-96/055) and the Data Quality Objectives Decision Errors Feasibility Trials (DEFT) Software (EPA/600/R-96/056). EPA-approved references, or alternative methods approved by EPA shall be used, and their corresponding EPA-approved guidelines should be applied when they are available and applicable.

Laboratory QA/QC Procedures:

The QA/QC procedures and SOPs for any laboratory (both fixed and mobile) used during the RI/FS shall be included in the Respondents' QAPP. When this work is performed by a contractor to a private party, all laboratories performing chemical analyses shall meet the following requirements:

1. be approved by the State Laboratory Evaluation Program, if available;
2. have successful performance in one of EPA's National Proficiency Sample Programs (e.g., Water Supply or Water Pollution Studies or the State's proficiency sampling program);
3. be familiar with the requirements of 48 C.F.R. Part 1546 for contract requirements for quality assurance; and
4. have a laboratory Quality Manual (QM) or Quality Assurance Program/Project Plan (QAPP), pertinent to the project specific analyses. This documentation shall be referenced as part of the contractor's QM/QAPP.

Data Validation Procedures:

The Respondents are required to certify that a representative portion of the data has been validated by a person independent of the laboratory according to the current EPA New England data review guidance referenced above (amended as necessary to account for the differences between the approved analytical methods for the project and the current

Contract Laboratory Program Statements of Work ("CLP SOW") or equivalent). A data review reporting package as described in the guidelines cited above must be delivered at the request of the EPA Remedial Project Manager. The data review procedures shall be documented in the QAPP.

The independent validator shall not be the laboratory conducting the analysis and should be a person with a working knowledge of or prior experience with EPA data review procedures. The independent reviewer shall certify that the data have been reviewed, discrepancies have been resolved, if possible, and the appropriate qualifiers have been applied to the data.

Data Package Requirements:

The Respondents must require that the laboratories keep the complete data package and make them available to EPA on request in order for EPA to conduct an independent review of the data. The complete data package shall consist of all results, a case narrative, the raw data for all field samples and QA/QC data, defined in the CLP SOW, SOM01.2 or current method(s) or equivalent. The forms in the data review guidelines must be utilized to report the data review, as applicable. Raw data include the associated chromatograms and the instrument printouts with area and height peak results. The peaks in all standards and samples must be labeled, or, for each sample and standard, a summary page will be provided that lists, for each retention time peak, the compound identified. The concentration of all standards analyzed with the amount injected must be included. All laboratory tracking information must also be included in the data package.

If the CLP program or equivalent, is used to analyze samples, then all deliverables required under the current CLP SOW or equivalent, must be delivered. An example CLP-like set of data package deliverables is listed below:

1. a summary of positive results and detection limits of non-detects with all raw data;
2. tabulated surrogate recoveries and QC limits from methods 3500 and 8000 in SW-846 and all validation and sample raw data;
3. tabulated matrix spike/matrix spike duplicate recoveries, relative percent differences, spike concentrations, and QC

limits from methods 3500 and 8000 in SW-846 and all validation and sample raw data;

4. associated blanks (trip, equipment, and method with accompanying raw data for tests);
5. tabulated initial and continuing calibration results (concentrations, calibration factors or relative response factors and mean relative response factors, % differences and % relative standard deviations) with accompanying raw data;
6. tabulated retention time windows for each column;
7. a record of the daily analytical scheme (run logbook, instrument logbook) which includes samples and standards order of analysis;
8. the chain of custody for the sample shipment groups, DAS packing slip, DAS analytical specifications;
9. a narrative summary of method and any problems encountered during extraction or analysis;
10. tabulated sample weights, volumes, and % solids used in each sample calculation;
11. example calculation for positive values and detection limits; and
12. SW-846 method 3500 and 8000 validation data for all tests.

The forms contained in SW-846, Chapter 1 or the current CLP SOW forms or equivalent must be utilized to report the data, as applicable. Raw data includes the associated chromatograms and the instrument printouts with area and height peak results. The peaks in all standards and samples must be labeled. The concentration of all standards analyzed with the amount injected must be included. All internal and external laboratory sample tracking information must be included in the data package.

2b. Field Sampling Plan ("FSP")

The objective of the Field Sampling Plan ("FSP") is to provide EPA, RIDEM and all parties involved with the collection and use of field data with a common written understanding of all fieldwork and the standard procedures that will be used to collect samples and to supplement the sampling rationale information found in the QAPP. The FSP shall address the RI/FS objectives and conform to the procedures in Section 2 of this document and the NCP.

The FSP shall define in detail the sampling and data gathering methods

used on a project. The FSP shall be written so that a field sampling team unfamiliar with the Site would be able to gather the samples and field information required. Guidance for the selection of field methods, sampling procedures, and custody may be acquired from the Compendium of Superfund Field Operations Methods (OSWER Directive 9355.0-12, EPA/540/P-87/001), which is a compilation of demonstrated field techniques that have been used during remedial response activities at hazardous waste sites.

The FSP shall supplement the site-specific sample collection information in the QAPP and shall include the following information only if the QAPP does not contain the information:

Site Background. (Compendium Sections 5, 6, and 7) The analysis of the existing Site details must be included in the FSP. This analysis shall include a conceptual site model. A conceptual site model includes a description of the Site and surrounding areas and a discussion of known and suspected contaminant sources, potential exposure pathways, the mobility of contaminants, the likely receptors (human and ecological), and other information about the Site. The FSP shall also include descriptions of specific data gaps and ways in which sampling is designed to fill those gaps.

Sampling Objectives. (Compendium Sections 7 and 8) Specific objectives of a sampling effort that describe the intended uses of data must be clearly and succinctly stated.

Sample Location, Analytes, and Frequency. (Compendium Section 8) This section of the sampling plan identifies each sample matrix to be collected and the constituents to be analyzed. Tables shall be used to clearly identify the number of samples to be collected along with the appropriate number of replicates and blanks. Preliminary figures shall be included to show the locations of existing or proposed sample points, as well as previously observed concentrations of contaminants from the sampling points, pertinent features which may potentially affect migration of contaminants, location of potential receptors and other information which would be used to in the selections of new sampling points.

Sample Designation. (Compendium Section 10) A sample numbering system shall be established. The sample designation

should include the sample or well number, the sample round, the sample matrix (e.g., surface soil, groundwater, soil boring), and the name of the Site.

Sampling Equipment and Procedures. (Compendium Section 9) Sampling procedures shall be clearly written. Step-by-step instructions for each type of sampling are necessary to enable the field team to gather data that shall meet the Data Quality objectives (DQOs). A list should include the equipment to be used and the material composition (e.g., Teflon, stainless steel) of equipment along with decontamination procedures.

Sample Handling and Analysis. (Compendium Section 10) A table shall be included that identifies sample preservation methods, types of sampling jars, shipping requirements, and holding times. Examples of paperwork such as traffic reports, chain of custody forms, packing slips or Analysis Request forms, and sample tags filled out for each sample as well as instructions for filling out the paperwork must be included. Field documentation methods including field notebooks and photographs shall be described.

Each part of the FSP submitted as a part of the RI/FS Work Plan shall be sufficiently detailed to carry out the study, and shall provide data needed to address the objective of the study and to complete the study. Each study shall be designed to achieve a high performance on the first attempt. Each part of the FSP shall be related (by cross-references) to the other requirements in the POP.

3. Health and Safety Plan

The objective of the site-specific HSP is to establish the procedures, personnel responsibilities, and training necessary to protect the health and safety of all on-site personnel during the RI/FS. The HSP shall provide for routine but hazardous field activities and for unexpected site emergencies.

The site-specific health or safety requirements and procedures in the HSP shall be based on an ongoing assessment of Site conditions, including the most current information on each medium. For each field task during the RI/FS, the HSP shall identify:

a. possible problems and hazards and their solutions;

b. environmental surveillance measures;
c. specifications for protective clothing;
d. the appropriate level of respiratory protection;
e. the rationale for selecting that level; and
f. criteria, procedures, and mechanisms for upgrading the level of protection and for suspending activity, if necessary.

The HSP shall also include the delineation of any exclusion areas on a map. The HSP shall indicate the on-site person responsible for implementing the HSP as a representative of the Respondents, protective equipment, personnel decontamination procedures, and medical surveillance. The following documents shall be consulted:

EPA's Standard Operating Safety Guide (OSWER Directive No. 9285.1-03, PB 92-963414, June 1992);

OSHA e-HASP Software - Version 1.0. September 2003 (www.osha.gov/dep/etools/ehasp/index.html)

Occupational Safety and Health Standards (Department of Labor, Occupational Safety and Health Administration ("OSHA"), 29 C.F.R. Part 1910);

Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: Appendix B (NIOSH/OSHA/USCG/EPA 1985);

Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final (OSWER Directive 9355.3-01, EPA/540/G-89/004); and

OSHA regulations at 40 C.F.R. § 1910 and Chapter 9 of the Interim Standard Operating Safety Guide.

The measures in the HSP shall be developed and implemented to comply with applicable state and federal occupational health and safety regulations. The HSP shall be consistent with the objectives and contents of all other plans submitted by the Respondents. The HSP shall be updated during the course of the RI/FS, as necessary.

4. Community Relations Support Plan (CRSP)

EPA, in coordination with RIDEM, will develop a Community Relations

Plan ("CRP") to describe public relations activities anticipated during the RI/FS. The Respondents shall develop a CRSP, the objective of which is to ensure and specify adequate support from the Respondents for the community relations efforts of EPA. This support shall include, at a minimum:

a. participation in public informational or technical meetings, including the provision of visual aids and equipment;

b. publication and copying of fact sheets or updates;

c. assistance in preparing a proposed plan; and

d. assistance in preparing a responsiveness summary after the RI/FS public comment period (and after EE/CA public comment period, if required).

C. Applicable or Relevant and Appropriate Requirements ("ARARs")

The Respondents shall identify all potential federal and state ARARs. Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a CERCLA site. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal or state environmental or facility siting laws that, while not applicable to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site.

In addition to ARARs, the Respondents shall also make preliminary determinations on the extent that other publicly available criteria, advisories, and guidance are pertinent to the hazardous substances, location of the Site, and remedial actions at the Site. ARARs and other criteria, advisories, and guidance shall be:

1. considered in terms of their chemical-specific, location-specific, and action-specific attributes;

2. evaluated for each medium (such as surface water, groundwater, sediment, soil, air, biota, and facilities, as required), particularly for chemical-specific ARARs, but including other ARARs as appropriate; and

3. distinguished for each technology considered, particularly for action-specific ARARs, but including other ARARs as appropriate.

In general, identification of chemical- and location-specific ARARs is more important in the beginning steps of the RI/FS, whereas the identification of action-specific ARARs gain importance later, during the more FS-oriented steps. If a requirement is determined to be not applicable, the Respondents shall subsequently consider whether it is relevant and appropriate. When any new site-specific information becomes available, ARARs should be re-examined.

Chemical-specific ARARs are usually health or risk-based numerical limits on the amount of, or concentration of, a chemical that may be found in, or discharged to the ambient environment.

Location-specific ARARs are general restrictions placed upon the concentration of hazardous substances or the conduct of activities solely because they are in special locations. Some examples of special locations include, but are not limited to, floodplains, wetlands, historic places, places with objects of archaeological significance, and sensitive ecosystems or habitats.

Action-specific ARARs are usually technology-based or activity-based directions or limitations which control actions taken at CERCLA sites. Action-specific ARARs, as the name implies, govern the remedial actions.

As part of the RI/FS Work Plan, the Respondents shall provide a list in the form of a chart of preliminary and potential ARARs and publicly available EPA and RIDEM criteria, advisories, and guidance, and limitations which should initially be inclusive of such requirements. The list shall briefly describe the requirements and shall include: if it is a numerical requirement; what it is based upon (e.g., health, technical practicality); and what media it is designed for (e.g., surface water, ambient air, etc.). The list shall indicate whether each requirement is: potentially applicable or relevant and appropriate; chemical-specific, location-specific, or action-specific; pertinent to surface water, groundwater, soil, air, biota, or facilities; and each requirement shall include specific levels or goals to be attained. If specific levels or goals are included, they must be enumerated in the chart. It is expected that this preliminary list will be modified during the RI/FS as more information is gathered.

Data requirements in terms of physical and chemical characteristics needed to evaluate ARARs shall be considered as part of the scoping for the RI. Such requirements may include but are not limited to chemical residuals, background levels, or various modeling parameters. Such data requirements shall be satisfied during the early steps of the RI to the extent possible, rather than during the later phases of the RI/FS.

The following shall be consulted during the ARAR identification process:

CERCLA Compliance with Other Laws Manual. Part I. Interim Final (OSWER EPA/9234.1-01, August 1988);

CERCLA Compliance with Other Laws Manual: Part II, Clean Air Act and Other Environmental Statutes and State Requirements (August 1989, EPA/540/G-89/009);

CERCLA Compliance with Other Laws Manual: CERCLA Compliance with the CWA and SDWA (OSWER Publication EPA/9234.2-06/FS, February 1990);

Section 4 of Guidance on Feasibility Studies Under CERCLA (EPA/540/G-85/003); and Appendix E of the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final (EPA/540/G-89/004, OSWER Directive 9355.3-01, October 1988), which present a partial list of potential ARARs;

Guidelines for Ground-Water Classification Under the [1984] EPA Ground-Water Protection Strategy, Final Draft (EPA/440/6-86-007, November, 1986);

Ground Water Protection Strategy (EPA, August 1984);

Clarification of the Role of Applicable, or Relevant and Appropriate Requirements in Establishing Preliminary Remediation Goals Under CERCLA (OSWER Directive 9200.4-23, August 1997); and

Permits and Permit 'Equivalency' Processes for CERCLA On-site Response Actions (OSWER Directive 9355.7-03, February 1992).

Additional potential ARARs shall be evaluated by the Respondents during a thorough search of applicable federal and state environmental statutes and

regulations.

Chemical- and location-specific ARARs, as well as action-specific ARARs, shall be identified after the development and Initial Screening of the Remedial Alternatives.

EPA shall have final authority in deciding which ARARs are retained or added for consideration, and the extent to which they must be considered in remedy selection.

Respondents shall provide justifications for incorporating or dropping a requirement where such decisions are made. The Respondents shall also consult ARARs identified in the 1988 L&RR Record of Decision.

Potential ARARs and To-Be-Considered requirements for the Site are listed below. The list is not complete because investigative efforts at the Site have not been completed. However, the list shall be used to focus tasks during the RI/FS. EPA may identify additional guidance documents that Respondents shall consult.

Safe Drinking Water Act

National Primary Drinking Water Standards, Maximum Contaminant Levels (40 CFR § 141): The maximum level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system.

Maximum Contaminant Level Goals (40 CFR § 141): The maximum contaminant level in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety.

Secondary Drinking Water Standards, Secondary Maximum Contaminant Levels (40 CFR § 143): Contaminants that primarily affect the aesthetic quality of drinking water and are not federally enforceable.

Underground Injection (40 CFR § 144): These standards may be applicable if underground injection is chosen as a remediation technology. These standards require compliance with certain administrative and procedural sections of 40 CFR § 265 Subpart R.

Clean Water Act

Clean Water Act Federal Water Quality Criteria, (*40 CFR 131.11, 1976, 1980 and 1986, and § 304(a)*) are Ambient Water Quality Criteria (AWOC) for chemicals

for both the protection of human health and the protection of aquatic life.

A *NPDES permit (40 CFR § 125)* may be required if the remedy includes discharging to surface water offsite.

Resource Conservation and Recovery Act

In general, the applicable solid and hazardous waste requirements shall be action-specific, applying to the remedial activities undertaken. RCRA requirements may be Applicable or Relevant and Appropriate.

Other potential ARARs include but are not limited to:

1. Endangered Species Act (50 CFR §§ 81, 225, and 402);
2. Fish and Wildlife Conservation Act (50 CFR § 83);
3. Wild and Scenic Rivers Act (36 CFR § 297);
4. Protection of Wetlands Executive Order No. 11990 (40 CFR Part 6);
5. Floodplain Management Executive Order No. 11988 (40 CFR Part 6);
6. Section 106 of the National Historic Preservation Act (Section 106 and 36 CFR § 800);
7. EPA Health Advisories;
8. EPA Carcinogenic Assessment Group Potency Factors;
9. Human Health Assessment Cancer Slope Factors;
10. EPA Risk Reference Doses (RfDs);
11. Guidelines for Carcinogenic Risk Assessment (EPA/630/P-03/001F)
12. Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (EPA/630/R-03/003F);
13. RIDEM Rules and Regulations Governing the Enforcement of the Freshwater Wetlands Act;
14. RIDEM Water Quality Regulations;
15. RIDEM Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (i.e., Remediation Regulations);
16. RIDEM Rules and Regulations for Hazardous Waste Management.

D. Data Requirements for Potential Remedial Alternatives and Technologies

Potential Remedial Action Objectives shall be identified for each contaminated medium, and a preliminary range of remedial action alternatives and associated technologies shall be identified. The Respondents shall identify, consistent with the NCP and applicable guidance, a range of potential remedial alternatives that may be useful in achieving media-specific ARARs and risk-based RAOs,

including, without limitation, physical treatment, in-situ treatment, and monitored natural attenuation. In discussing potential remedial alternatives, EPA describes an alternative as a group of technologies, including innovative ones, which will achieve certain remedial action goals. The Respondents shall identify the various technologies, showing the critical data needed to evaluate such technologies, and the performance of technologies grouped into an alternative. These data requirements shall be initially developed during the RI/FS Work Plan and shall be further updated and incorporated into subsequent field investigation work.

The identification of potential technologies shall help ensure that data needed to evaluate the technologies are collected during or as a result of the field investigations. Certain parameters may be common to several possible technologies and alternatives. For example, the following parameters for hydrogeology to characterize the groundwater flow are common: hydraulic head, aquifer porosity and permeability, water content, hydraulic conductivity, transmissivity, specific storage and specific yield, hydrodynamic dispersivity, retardation by adsorption, and contaminant-specific transport properties. Similar common data requirements exist for remedies for other media.

In addition to the common data requirements, any other data necessary to evaluate a particular technology or alternative leading to remedy selection shall be noted in the RI/FS Work Plan and subsequently integrated into each field investigation. Guidance documents to be used during the completion of the Remedial Investigation and Feasibility Study to identify alternative remedies and potential innovative technologies may include, without limitation, the following: EPA's Guidance on Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final (EPA/540/G-89/004, OSWER Directive 9355.3-01, October 1988); Presumptive Response Strategy and Ex-Situ Treatment Technologies for Contaminated Ground Water at CERCLA Sites, Final Guidance (OSWER Publication 9283.1-12, EPA/540/R-96/023, October 1996); Basics of Pump-and-Treat Ground-Water Remediation Technology (EPA/600/8-90/003 March 1990); Pump-and-Treat Ground-Water Remediation: A Guide for Decision Makers and Practitioners (EPA/625/R-95/005, July 1996); Ground Water Issue: Chemical Enhancements to Pump-and-Treat Remediation (OSWER Publication EPA/540/S-92/001, January 1992); Design Guidelines for Conventional Pump-and-Treat Systems (EPA/540/S-97/504, EPA-68-C4-0031 September 1997); A Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems (EPA 600-R-08-003, January 2008); In Situ and Ex Situ Biodegradation Technologies for Remediation of Contaminated Sites (EPA/625/R-06/015 October 2006); Introduction to In Situ Bioremediation of Groundwater (OSWER 542-R-13-018, December 2013); Engineered Approaches to In Situ Bioremediation of Chlorinated Solvents: Fundamentals and Field Application

(EPA 542-R-00-008, July 2000 (revised)); Economic Analysis of the Implementation of Permeable Reactive Barriers for Remediation of Contaminated Ground Water (EPA/600/R-02/034, June 2002); Identification and Characterization Methods for Reactive Minerals Responsible for Natural Attenuation of Chlorinated Organic Compounds in Ground Water (EPA/600/R-09/115, December 2009); A Guide for Assessing Biodegradation and Source Identification of Organic Ground Water Contaminants Using Compound Specific Isotope Analysis (CSIA) (EPA/600/R-08/148, December 2008); Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (Final OSWER Directive, EPA/540/R-99/009, April 1999); Performance Monitoring of MNA Remedies for VOCs in Ground Water EPA/600/R-04/027 April 2004); Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water (EPA/600/R-98/128, October 1998); An Approach for Evaluating the Progress of Natural Attenuation in Groundwater (EPA/600/R-11/204, December 2011); Promotion of Innovative Technologies in Waste Management Programs (OSWER Policy Directive 9380.0-25, April 1996); U.S. EPA Green Remediation: Incorporating Sustainable Environmental Practices into Remediation of Contaminated Sites (April 2008); and U.S. EPA Green Remediation Best Management Practices: Pump and Treat Technologies (December 2009) and Bioremediation (March 2010).

A preliminary list of broadly defined alternatives shall be developed by the Respondents in the RI/FS Work Plan. This list shall include a range of alternatives in which treatment that significantly reduces the toxicity, mobility, or volume of waste is a principal element; one or more alternatives that involve containment with little or no treatment; and a no-action alternative. The Respondents shall present a chart, or a series of charts, showing the data requirements and technologies to be considered for each remedial alternative. In the charts, data requirements shall be linked to the Work Plan for the RI.

E. Expanded Schedule for OU 2 RI/FS

The major predetermined deliverables are identified in Table 1. The established schedule along with a more detailed, expanded schedule for subtasks shall be included as a component of the RI/FS Work Plan. After EPA has approved or modified the RI/FS Work Plan, the Respondents may request revisions to the schedule for EPA review and approval, after reasonable opportunity for review and comment by RIDEM.

C. REMEDIAL INVESTIGATION

I. OBJECTIVES

At its onset, the goal of the RI shall be to collect and review existing field data and reports, and collect all new field data necessary to complete the RI, the Baseline Human Health Risk Assessment, SLERA, (BERA, if determined necessary by EPA, after reasonable opportunity for comment by RIDEM), and the FS and which will be sufficient for EPA to select an OU 2 remedy. At a minimum, the Respondents shall characterize and/or describe the following:

A. nature and extent of hazardous substances;

B. concentration, toxicity, environmental fate, transport, persistence, mobility, and other significant characteristics of hazardous substances identified at the Site. All samples shall be analyzed for VOCs (including 1,4-dioxane with sufficiently low detection limits), total and dissolved metals and any additional compounds approved as part of the work plan. Contractors shall follow low-flow sampling procedures inclusive of recording stabilization parameters;

C. the media of occurrence, interface zones between media, and critical parameters for treatment;

D. hydrogeologic factors for overburden and bedrock (e.g., depth to water table and water table fluctuations, hydraulic gradients, hydraulic conductivity, porosity, estimated recharge), and groundwater contour maps and flow nets for each hydrogeological unit (overburden, shallow bedrock and deep bedrock) using groundwater elevation data from each of the wells, piezometers and surface water bodies;

E. borehole geophysical logging of the bedrock boreholes to include, at a minimum, borehole caliper, fluid temperature/resistivity, natural gamma, optical televiewer (OTV), acoustic televiewer (ATV), and heat pulse flow-meter measurements. Packer testing and sampling are to be performed at each bedrock borehole after review of the borehole geophysical logs;

F. lateral and vertical extent and detail of the contaminant plume present and the groundwater/surface water interface of the groundwater discharge pathways to surface water and wetland areas;

G. chemical, physical, and biological processes that may work to limit the continued transport, diminish the concentration, or otherwise attenuate contamination. Identify the degree to which these processes can be expected to provide adequate natural attenuation and how these processes may be enhanced;

H. climate and water table fluctuation (e.g., precipitation, run-off, stream flow, water budget);

I. extent to which the hazardous substances have migrated or are expected to migrate from their original location, and identify probable receptor areas;

J. contaminant(s) contribution to the air, land, waters, and sediments, and the food chain, as applicable;

K. floodplain (including identification of 100-year floodplain) and delineated wetlands, if necessary, surface water classifications and their existing use designations;

L. groundwater characteristics and current and potential groundwater uses (e.g., characteristics related to the groundwater classes described in the Ground-Water Protection Strategy (EPA, 1984));

M. potential extent and risk of future releases of substances or residuals remaining on-site and off-site;

N. physical characteristics of the Site, including important surface features, soils, geology, hydrogeology, meteorology, and ecology;

O. characteristics or classifications of air, surface water, and groundwater, including significant natural resource areas designated by federal and state laws;

P. location of public and private water wells (e.g., aquifers used, construction details external or internal spigots, water quality);

Q. extent to which contamination levels exceed screening or health-based levels prompting a necessary response action;

R. actual and potential exposure pathways through environmental media;

S. actual and potential exposure routes, for example, inhalation and ingestion, including vapor intrusion to any buildings;

T. other factors, such as sensitive populations and threatened or endangered species, that pertain to the characterization of the Site or support the analysis of potential remedial action alternatives; and

U. a conceptual site model incorporating above information.

Using this information, the Respondents may be required to further define the boundaries of the RI/FS study area. The field investigations shall provide information sufficient to

refine the preliminary identification of potentially feasible remedial technologies, potential ARARs, and data needed to perform the Baseline Human Health Risk Assessment and SLERA.

II. COMPONENTS OF THE RI

A. Site Survey

The Respondents shall use an existing site survey (base map) for the Site, which shall be expanded and updated as necessary. The Site base map shall have elevation contours and shall display survey data collected at the Site. The base map shall contain standard topographic, physiographic, cultural, and facility features, the surveyed locations of all wells, and surface sampling locations such as soil, sediment, surface water samples collected for assessment or remedial confirmation, or where media-specific samples were previously collected. The base map shall also show all delineated wetland and 100-year floodplain areas, and any designated federal and state natural resource areas.

If necessary, the Respondents shall prepare similar maps of appropriate scale that show off-site sampling locations. The basis of one of these maps shall be the U.S. Geological Survey 7.5 minute quadrangle that includes the Site.

The Respondents shall determine the elevations and locations of all wells and piezometers utilized in the RI, and samples collected as part of the RI. It may be necessary to periodically modify the Site base maps based on the ongoing results of the remedial investigations. The base maps shall be of sufficient detail to delineate areas into which contaminants may migrate. The plan for this component will be completed and shall be part of the RI/FS Work Plan's POP.

B. Sources of Contaminants

The Respondents shall use available data and information to characterize and/or describe the sources of contamination, including data collected as part of the on-going L&RR landfill long-term monitoring conducted pursuant to the 1997 Settlement Agreement and Consent Decree and 1996 Post-Closure Operation and Maintenance Plan, as necessary for the evaluation in this RI/FS. The Respondents shall confirm whether the sources of contamination at the Site are sufficiently characterized and shall identify any additional data or information needed.

C. Subsurface and Hydrogeological Investigations

The Respondents shall utilize available data to plan, conduct, and report subsurface and hydrogeological investigations sufficient to characterize and/or describe, at a minimum, the following:

a. the nature and extent of groundwater and surface water contamination (lateral and vertical, in each hydrologic unit) sufficient to define the boundaries of contaminant plumes located on the Site and to characterize the aquifers in three dimensions, including bedrock;

b. populations and environments at risk and potential risks associated with future releases, if applicable;

c. the subsurface stratigraphy, bedrock contours, structure and properties for each hydrologic unit. The following may be included in this analysis: thickness, lithology, grain size distribution (glacial deposits), soil index properties (e.g., plasticity index), porosity, hydraulic conductivity, fraction of organic carbon, storativity, sorting, fracturing (orientation, frequency), and moisture content;

d. the concentration, transport mechanisms, potential receptor locations, and other significant characteristics of each contaminant;

e. a quantification of the hydrogeological factors (e.g., in-situ hydraulic conductivity, storativity, conductivity, and storage capacity of each hydrologic unit; aquifer thickness; hydraulic and pressure gradients; and degree of interconnection between the different hydrogeologic units (e.g., bedrock and specific overburden strata));

f. the routes of groundwater migration, transport rates, and potential receptors. Also determine or qualitatively describe the locations, flow rates, contaminant concentrations, variability for discharge to bodies of surface water and wetlands, and head distributions within the geohydrologic units;

g. depth to and seasonal fluctuations in the water table, flow gradients, and contaminant concentrations, simultaneously with other factors such as precipitation, run-off, and stream flow;

h. the condition, need to replace, and utilization of any existing monitoring wells and boreholes;

i. the construction location, and proximity, of residential and municipal wells;

j. an assessment of groundwater contaminant plume stability and the migration potential of hazardous substances. Analytical and/or numerical models and a process for modeling should be identified. The parameters, assumptions, accuracy, contingencies of the studies must be explicitly stated, and a plan established to verify the modeling if a significant risk is

indicated for a specific population or environment;

k. a review and illustration of groundwater and surface water classifications and the need for institutional controls on groundwater and surface water uses;

l. physical and chemical characteristics that may affect the possible type of treatment (this information must be reported in a chart); and

m. the background concentrations of naturally occurring contaminants in groundwater at a sufficient number of horizontal and vertical locations, including at least one for the saturated unconsolidated overburden and bedrock.

The Respondents shall present the results and describe the actual procedures that they used in conducting the RI (especially when the actual procedures differ from those in the RI/FS Work Plan). The Respondents shall present all data, analyses, maps, cross sections, and charts necessary to meet the objectives for the investigations. Illustrations shall clearly identify the data points, values, and the degree of interpolation or extrapolation necessary to draw conclusions

D. Air Quality Assessment

The Respondents shall document whether air quality assessment needs to be implemented as part of this RI/FS.

E. Surface Water, Pore Water and Sediments

The Respondents shall determine the nature and extent of contamination to nearby surface water bodies and associated wetlands (Trout Brook Pond and stream). Releases of concern may occur through overland flow and groundwater migration. The Respondents shall also evaluate the nature and extent of contaminants in surface water and sediments at upgradient/upstream reference locations.

The Respondents shall determine the nature and extent of contaminants in the water and sediments of surface drainage areas and associated wetlands, both perennial and intermittent, potentially affected by contaminants from the Site. Samples of surface water and sediment shall be collected and analyzed from several locations and in each surface water flow path that may be affected by contaminants at the Site. The collection and analysis of the upgradient samples shall be sufficient to determine background concentrations of analytical parameters or to discriminate contaminants from the Site from those originating at other sources. As necessary, sampling schedules shall include the monitoring of seasonal changes including low flow periods. Sediment sampling shall be

implemented to determine the vertical and horizontal limit of sediments impacted by the Site. Data to determine the grain size and organic content of the sediments as well as the bioavailability of the contamination in the sediments shall be collected. The Respondents shall evaluate sediment deposition rates, the potential for sediment transport, and the fate of contaminated sediment. The Respondents shall collect pore water and sediment samples to evaluate the groundwater and surface water interface and determine groundwater discharge pathways to surface water and wetland areas where appropriate. The Respondents shall also determine whether, and the extent to which, the sediments are a source of surface water contamination and biota contamination.

The surface water, pore water and sediment sampling data shall be compiled and presented using tables, graphs, charts, and other visual aids. These illustrations shall indicate the static water levels at the time of sampling and seasonal fluctuations of water levels and the impacts of those changes on contaminant concentration and migration.

F. Ecological Assessment

The Respondents shall evaluate and assess the risk to the environment posed by Site contaminants. The bulk sediment, pore water and surface water data will be used in a Screening-Level Ecological Risk Assessment ("SLERA") comparing sediment, pore water and surface water chemistry results to appropriate bench marks. Receptor groups shall include aquatic invertebrates, amphibians, fish, and terrestrial birds and mammals, as appropriate.

The SLERA will be performed using existing representative data, as applicable, and additional data collected as part of the RI. The data and evaluations shall satisfy the following SLERA requirements: screening-level problem formulation, screening-level exposure estimate and risk calculation, and summary of data gaps and recommendations for future sampling in support of the Baseline Ecological Risk Assessment. The Respondents shall submit a Draft SLERA Technical Memorandum and hold a meeting with EPA and RIDEM to present the preliminary SLERA information and a recommendation on a need for and scope of a BERA.

G. Pre-Record of Decision Monitoring and Sampling

The Respondents shall monitor the groundwater and surface water/sediments to determine the potential changes in the nature, extent, quantity, seasonal variability, climatological influence, environmental fate and transport, background levels, and migration pathways for each contaminant identified at the Site. The extent of this sampling will be dependent on the results of the RI. Pre-ROD monitoring and sampling shall commence with the RI field investigation and continue until the FS Report is approved or modified by EPA, after reasonable opportunity for review and comment by RIDEM. This monitoring

may be implemented in conjunction with the L&RR landfill long-term monitoring or prior to execution of the Settlement Agreement. Upon request by EPA, after reasonable opportunity for review and comment by RIDEM, the Respondents shall continue a portion of the sampling until implementation of any OU2 remedy at the Site.

The Respondents shall include pre-ROD sampling and monitoring results in the RI and/or FS reports. This sampling and monitoring shall meet the overall objectives of the RI/FS. Results shall be presented after each sampling event and in accordance with the procedures described in the RI/FS Work Plan POP. Results of each round of sampling may be statistically and mathematically compared with results of previous rounds. Deviations and trends shall be illustrated and explained. All sampling reports shall be submitted to EPA and RIDEM as soon as possible following the sampling event.

H. Treatability and Pilot Studies

The objective of the treatability and pilot studies is to obtain the information necessary to evaluate the effectiveness of potential remedial treatment technologies. If EPA finds that treatability and/or pilot studies are required, the Respondents may need to conduct laboratory-scale simulations of treatment processes to evaluate the treatability of contaminated groundwater, surface water, soils, and other environmental media. In any treatability and/or pilot studies, the Respondents may evaluate groundwater containment and treatment options, e.g., pump & treat, biological treatments, physical separation, chemical conditioning, and in-situ treatments.

The data from additional sampling programs and previously available data on the Site may be sufficient to develop a well-designed pilot program, if such a program is necessary. Before dynamic modeling, bench-scale tests may be performed to establish the "preliminary" treatability of contaminated media. Through the bench-scale tests, the Respondents may initially evaluate the applicability of treatments. Treatability studies to determine the most effective technologies to remediate the contaminant plume shall be initiated as early as possible if deemed necessary by EPA. The pilot groundwater studies may also be used as a basis for an EE/CA. These studies may be conducted anytime during the RI.

As proposed by the Respondents or upon the request of EPA, the Respondents shall prepare a Treatability Study Work Plan for bench-scale and pilot-scale treatability investigations. The Respondents shall submit this Treatability Study Work Plan to EPA and RIDEM prior to the performance of treatability and pilot studies, and this plan may become an addendum for the RI/FS Work Plan. This Treatability Study Work Plan must clearly define the purpose of the study and include a detailed test plan including drawings and a step-by-step procedure, if applicable.

Results of treatability and pilot studies shall be in the form of a report describing methods, analyses, and results, and be part of the FS Report.

III. DELIVERABLES

A. RI Report

The Respondents shall submit an RI Report, which meets the reporting requirements stated in this section, and shall include the methods, data gathered, and analyses of results of all RI activities, as well as detail from all relevant studies and findings that have been completed at the Site, and a CSM. This report shall also include data in the form of summary tables organized by media, and a detailed description (with figures) of all sampling locations and depths. The Respondents shall evaluate in the RI Report how well the studies satisfy the objectives of the RI/FS. The report shall also explain differences between the actual field work and the work specified by the EPA-approved RI/FS Work Plan. Deficiencies in satisfying the objectives of the report shall be clearly stated.

As part of the RI Report, the Respondents shall prepare a concise Executive Summary. This Executive Summary shall summarize the investigative activities that have taken place, describe and display the extent of contamination through each of the affected media, and identify any remaining data gaps. The report shall include tabular summaries of analytical, survey, and hydrogeologic data. In addition, maps shall be presented that depict the location and characteristics of site features, groundwater potentiometric contours, and the distribution of various analytical parameters in the tested media (e.g., groundwater, surface water, and sediments). Vertical cross sections may be used to display the distribution of selected analytical parameters in the subsurface. If appropriate, EPA, RIDEM and the Respondents will have a technical meeting(s) prior to the Respondents' submission of the RI Report.

In the RI, the Respondents shall gather field data necessary to fulfill the requirements of the following:

A. RI Report (including the Baseline Human Health Risk Assessment and SLERA); and

B. FS Report, including any additional studies and investigations to fill identified data gaps.

After the RI Field Investigation, the need for additional information may become apparent. If EPA, after reasonable opportunity for review and comment by RIDEM, determines that additional information is necessary to meet the objectives of the RI/FS, the Respondents shall obtain the required additional information and include such data in the FS report.

D. BASELINE RISK ASSESSMENTS

I. RISK ASSESSMENTS OBJECTIVES

The Respondents shall complete a Baseline Human Health Risk Assessment and a Screening-Level Ecological Risk Assessment. EPA may require in its sole discretion the Respondents to conduct a full Baseline Ecological Risk Assessment based on results of the SLERA. The objective of these assessments is to characterize, and quantify where appropriate, the current and potential human health and environmental risks that would prevail if no further remedial action is taken at the Site. Based on contaminant identification, exposure assessment, toxicity assessment, and risk characterization, the Respondents shall develop a human health and ecological risk conceptual site model of the Site.

II. RISK ASSESSMENT GUIDANCE

The risk assessment shall be completed in accordance with current guidance, procedures, assumptions, methods, and formats, including those listed below.

For the human health risk assessment:

Risk Assessment Guidance for Superfund (RAGS): Volume I, Human Health Evaluation Manual (Part A), Interim Final, OSWER Directive 9285.7-01A, EPA/540/1-89/002, December 1989.

Risk Assessment Guidance for Superfund (RAGS): Volume I - Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments), Final, OSWER Directive 9285.7-47, December 2001.

Risk Assessment Guidance for Superfund (RAGS): Volume I - Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals), Interim, OSWER Directive 9285.7-01B, EPA/540/R-92/003, PB92-963333, December 1991.

Risk Assessment Guidance for Superfund (RAGS): Volume I - Human Health Evaluation Manual (Part C, Risk Evaluation of Remedial Alternatives), OSWER Directive 9285.7-01C, PB92-963334, October 1991.

Risk Assessment Guidance for Superfund (RAGS): Volume I - Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Interim, OSWER Directive 9285.7-02EP, PB99-963312, September 2001

Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors", OSWER Directive 9285.6-03 (EPA, March 25, 1991).

Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-08I, June 22, 1992.

EPA Region I Supplemental Risk Assessment Guidance for the Superfund Program Part 1: Public Health Risk Assessment, EPA 901/5/89-001, June 1989.

Final Guidance Data Usability in Risk Assessment (Part A), OSWER Directive 9285.7-09A, PB92-963356, April 1992.

Guidance for Data Usability in Risk Assessment (Part B), OSWER Directive 9285.7-09B, PB92-963362, May 1992.

Dermal Exposure Assessment: Principles and Applications, Interim Report, Office of Research and Development, EPA/600/8-91/B, 1992.

Exposure Factors Handbook, Volumes I, II, and III, EPA/600/P-95/002Fa, August 1997.

Role of Background in the CERCLA Cleanup Program, OSWER Directive 9285.6-07P, April 26, 2002.

Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites, EPA/540/R-01/003, OSWER Directive 9285.7-41, September 2002.

RIDEM Remediation Regulations requirements for background samples, as amended November 2011.

Guidance on Risk Characterization for Risk Managers and Risk Assessors (Memorandum from F. Henry Habicht, EPA Deputy Administrator, to Assistant Administrators and Regional Administrators), Office of the Administrator, Washington, DC, 1992.

EPA Risk Characterization Program (Memorandum from Administrator Carol M. Browner to Assistant Administrators, Associate Administrators, Regional Administrators, General Counsel and Inspector General), Office of the Administrator, Washington, DC, March 21, 1995.

Soil Screening Guidance: User's Guide, EPA/540/1R-96/018, July 1996.

Calculating Upper Confidence Limits in Exposure Point Concentrations at Hazardous Waste Sites, OSWER Directive 9285.6-10, December 2002.

Proposed Guidelines for Carcinogen Risk Assessment, Office of Research and Development, Washington, DC, EPA/600P-92/003C, 1996.

Guidelines for Carcinogenic Risk Assessment, SAB Review Draft, NCEA-F-0644, July 1999.

Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, Peer Review Draft, OSWER Directive 9355.4-24, March 2001.

Integrated Risk Information System (IRIS).

Health Effects Assessment Summary Tables (HEAST), EPA/540/R-97/036, July 1997.

Land Use in the CERCLA Remedy Process (Memorandum from E.P. Laws to EPA Regional Directors), OSWER Directive 9355.7-04, May 1995.

Air/Superfund National Technical Guidance Study Series, Volumes I, II, III, and IV, EPA 450/1-89/001,002,003,004, July 1989.

Guidelines for Carcinogen Risk Assessment, EPA/630/P-03/001F, March 2005.

Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens, EPA/630/R-03/003F, 2005.

Guidance Manual for Health Risk Assessments of Hazardous Substance Sites.

Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil, OSWER 9200.1-113, December 2012.

OSWER Memorandum Determining Groundwater Exposure Point Concentrations, Supplemental Guidance, March 2014.

Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors, OSWER Directive 9200.1-120, February 2014.

For the SLERA:

Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final, OSWER Directive 9285.7-25, EPA/540/R-97/006, PB97-963211, June 1997.

The Respondents will need to comply with additional ecological risk assessment guidance if EPA determines that a full Baseline Ecological Risk Assessment is required.

Additional guidance that may be used to prepare and conduct the Baseline Human Health Risk Assessment are:

a. Carcinogen Risk Assessment (51 FR 33992, September 24, 1986);
b. Mutagenicity Risk Assessment (51 FR 34006, September 24, 1986);
c. The Health Risk Assessment of Chemical Mixtures (51 FR 34014, September 24, 1986);
d. The Health Assessment of Suspect Developmental Toxicants (56 FR 63798,

December 5, 1991); and

e. Guidelines for Exposure Assessment (57 FR 22888, May 29, 1992).

III. RISK ASSESSMENT METHODOLOGIES

A. Components of the Risk Assessment

The Risk Assessment shall consist of two components: 1) the baseline human health risk assessment; and 2) the ecological risk assessment.

The baseline human health risk assessment shall address the following five categories at a minimum:

1. hazard identification;
2. dose-response assessment;
3. exposure assessment;
4. risk characterization; and
5. limitations/uncertainties.

A Screening-Level Ecological Risk Assessment (SLERA) shall consist of:

1. Screening-Level Problem Formulation;
2. Screening-Level Exposure Estimate and Risk Calculation; and
3 Summary of data gaps and recommendations for future sampling in support of the Baseline Ecological Risk Assessment.

If a full baseline ecological risk assessment is required, then the ecological risk assessment shall address the following seven categories:

1. definition of objectives;
2. characterization of site and potential receptors;
3. selection of chemicals, species and endpoints for risk evaluation;
4. exposure assessment;
5. toxicity assessment;
6. risk characterization; and
7. limitations/uncertainties.

B. Data Acquisition

The Baseline Human Health Risk Assessment and SLERA shall be based upon information gathered prior to and during the RI/FS at the Site, as well as on data available through peer-reviewed literature. The Respondents shall, at the direction of EPA, collect additional field data to support the risk assessments. Primary importance will be placed upon data collected in the field at the Site, with data collected from the literature used to support or explain field results.

C. Deliverables

The final product(s) shall be a Screening-Level Ecological Risk Assessment (SLERA) Report and the Baseline Human Health Risk Assessment Report. EPA can also require a Baseline Ecological Risk Assessment Report based on results of the SLERA. Prior to submission of the report(s), portions of the risk assessments may be submitted to EPA and RIDEM in the form of interim deliverables. The final schedule and the need for the interim deliverables shall be finalized in the approval of the RI/FS Work Plan. These interim deliverables, if needed, shall be reviewed and approved or modified by EPA, after reasonable opportunity for review and comment by RIDEM, before proceeding with the next interim deliverable. Once all of the interim deliverables are accepted, a Baseline Risk Assessment Report(s) and/or SLERA shall be submitted either as a separate deliverable or as part of the RI Report per schedule in Table 1.

Technical meetings may substitute for some of the interim deliverables. The following are examples of possible interim deliverables:

a. Interim Baseline Human Health Risk Assessment Deliverable(s):

i. Hazard Identification

The objective of this deliverable is to present an orderly compilation of the available sampling data on the hazardous substances present at the Site, to identify data sets suitable for use in a quantitative risk evaluation, and if necessary, to identify contaminants of concern upon which the quantitative assessment of risk will be based.

This deliverable shall contain information identifying the extent of contamination in each medium. Summaries of the sampling data shall also be generated for each constituent detected in each medium indicating: the mean and maximum concentrations (including location of the latter), the frequency of detection, identification of the regulatory criteria (e.g., MCL/MCLGs), and the number of times the regulatory criteria is exceeded, where appropriate. In addition, pictorial/graphic displays of the data are strongly encouraged.

If the number of contaminants detected is so large that quantification of health risks for each contaminant would be infeasible, then contaminants of concern may be selected. Contaminants of concern for each medium shall be identified in accordance with the EPA Region I Supplemental Risk Assessment Guidance for the Superfund Program Part 1: Public Health Risk Assessment, EPA 901/5/89-001, June, 1989, ("Region I Supplemental Risk Assessment Guidance for Superfund"). A narrative shall be supplied describing the selection process of contaminants of

concern. Important factors in choosing contaminants of concern include contaminant concentration and frequency of detection, potential contaminant releases, potential routes and magnitude of exposure, environmental fate and transport, and toxicity.

ii. Exposure Assessment

The purpose of this deliverable is to identify all plausible present and potential future exposure pathways and exposure parameters in accordance with the Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors, OSWER Directive 9200.1-120, February 2014. Identification of complete exposure pathways include: a source, transport medium, and exposure route. If no site-specific exposure parameters are provided, values found in Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors, OSWER Directive 9200.1-120, February 2014 or in the Region I Supplemental Risk Assessment Guidance for Superfund should be used.

The average and reasonable maximum exposure levels which shall be characterized in the exposure assessment are defined by the manner in which the contaminant concentration (average or maximum) is coupled with conservative exposure parameters developed for each exposure scenario per hazard identification.

The resulting exposure levels (to be referred to as the average and reasonable maximum exposure levels) shall be revised in the risk characterization report, if additional validated data is received.

Narrative descriptions and summary tables of exposure scenarios shall be provided. The exposure scenarios for current and potential future land use shall include, but not be limited to exposure parameters characteristic of a reasonable exposure for the following: frequency and duration of exposure, body weight and the magnitude of exposure to the contaminated medium.

iii. Dose-Response Evaluation

Dose-response evaluation identifies the nature and probability of adverse health effects which could be expected to result from exposure to the contaminants of concern. Carcinogenic and noncarcinogenic effects shall be characterized independently. The dose-response evaluation for possible carcinogenic effects is described by the cancer slope factor, while for noncarcinogenic effects the reference dose ("RfD") or other suitable

health based criteria should be used. Agency verified dose-response criteria obtained from IRIS should preferentially be utilized.

The Respondents shall provide a dose-response evaluation consistent with the EPA Region I Supplemental Risk Assessment Guidance for the Superfund.

iv. Risk Characterization

Risk characterization integrates the information developed during the toxicity assessment (hazard identification and dose response evaluation) and the exposure assessment to quantify the risks from the Site for each exposure pathway.

Presentation of the risk characterization shall be in the form of tables that separately summarize the noncarcinogenic and carcinogenic health risk.

v. Uncertainties and Limitations

This section shall address the uncertainties and limitations of the analysis. It shall clearly address the major limitations, sources of uncertainty, and if possible, provide an indication as to whether they have resulted in an over or under-estimation of the risk.

b. Screening-Level Ecological Risk Assessment (SLERA) Interim Deliverables:

i. **Screening-Level Problem Formulation**. Characterize the Site and potential receptors in a draft site ecological risk model describing complete exposure pathways to receptors. Select chemicals of potential concern (COPCs), receptors and endpoints.

ii. **Screening-Level Exposure Estimate and Risk Calculation**. Estimate risk to potential receptors by comparing screening-level benchmarks to chemical data on media-specific basis. Site-specific factors including SEM/AVS, TOC, and water hardness shall be used to estimate exposure risk as appropriate. Food chain modeling may be included. If unacceptable risk to ecological receptors is identified, the list of COPCs will be narrowed and risks investigated further, or information used to propose ecological-risk based remediation goals.

iii. **Summary**. Summary of data gaps and recommendations for future sampling in support of any required Baseline Ecological Risk Assessment.

D. Format of the Risk Assessment Report(s)

The Risk Assessment Report(s) shall be submitted after the completion and acceptance of any interim deliverables in accordance with the schedule approved in the RI/FS Work Plan. The format of this reports shall conform to the chapters and sections as follows:

I. Baseline Human Health Risk Assessment

1.0 Introduction/Hazard Identification
- *1.1 Site description and history*
  - *1.1.1 Present and future land use*
  - *1.1.2 Human receptors (including type, location and numbers)*
- *1.2 Nature and extent of contamination found at the site*
- *1.3 Selection of contaminants of concern*
  - *1.3.1 Health based ARARs (e.g. MCL/MCLG/RIDEM levels)*
- *1.4 Fate and transport*

2.0 Exposure Assessment
- *2.1 Exposure pathways*
- *2.2 Exposure scenarios*
  - *2.2.1 Exposure point concentrations (ug/l, mg/kg, ug/m3)*
  - *2.2.2 Exposure dose levels (mg/kg/day)*

3.0 Dose Response Evaluation
- *3.1 Dose response criteria for carcinogenic effects*
- *3.2 Dose response criteria for noncarcinogenic effects*

4.0 Risk Characterization
- *4.1. Narrative and tables summarizing the carcinogenic and noncarcinogenic risks by exposure pathway for the present and potential future exposure scenarios*

5.0 Uncertainty/Limitations

6.0 References

7.0 Appendices
- *7.1. Documentation/data*
- *7.2. Toxicity profiles for contaminants of concern*

II. Ecological Risk Assessment

The Respondents shall provide a SLERA Report with summaries, tables, recommendations, and other pertinent information for EPA to determine whether to require the Respondents to develop and provide a Baseline Ecological Risk Assessment, as identified in Table 1. The SLERA shall follow the 1997 USEPA guidance Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments (EPA 540-R-97-006) http://www.epa.gov/oswer/riskassessment/ecorisk.

If required, based on results on the SLERA, EPA will provide the Respondents with information on the format of the Baseline Ecological Risk Assessment.

E. FEASIBILITY STUDY

I. DEVELOPMENT & INITIAL SCREENING OF ALTERNATIVES

A. Development of Alternatives

The Respondents shall develop an appropriate range of remedial options in a manner consistent with the NCP, the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final (OSWER Directive 9355.3-01), and any format or guidance provided by EPA Region 1. Alternatives for remediation shall be developed by assembling combinations of technologies (including innovative ones that offer the potential for superior treatment performance or lower cost for performance similar to that of demonstrated technologies) and the media to which they would be applied into alternatives that address contamination at the Site or for an identified operable unit.

1. Objectives

Alternatives shall be developed that:

a. protect human health and the environment by treating or recycling waste, or by eliminating, reducing, and/or controlling risks to human health and the environment posed through each pathway at the Site;

b. consider the persistence, toxicity, mobility, and propensity to bioaccumulate of hazardous substances and their constituents;

c. consider the short and long term potential for human exposure;

d. consider the potential threat to human health and the environment if the remedial alternative proposed were to fail;

e. consider potential impacts to wetlands and wetland biota; and

f. provide an estimate of the number of years necessary to achieve clean-up goals for groundwater alternatives, including extraction and treatment remedial alternatives and monitored natural attenuation;

2. Development

In addition, the Respondents shall perform the following activities:

a. development of remedial action objectives, specifying the contaminants and media of concern (approved by EPA), potential exposure pathways (approved by EPA), and Preliminary Remedial Goals ("PRGs") that are based on chemical specific ARARs, EPA risk assessment data, and Site characterization data;

b. development of general response actions for each media of interest defining engineering controls, treatment, pumping, or other actions, separately and in combinations that will satisfy the remedial action objectives;

c. identification of volumes or areas of media to which general response actions shall apply;

d. identification and screening of technologies, including innovative ones, that would be applicable to each general response action;

e. assembly of the selected technologies into alternatives representing a range of treatment and containment options; and

f. identification and evaluation of appropriate handling, treatment, and final disposal of all treatment residuals (e.g., activated carbon).

B. Initial Screening of Alternatives

1. Criteria

In screening the alternatives, the Respondents shall consider, but not be limited to,

the short and long term aspects of the following three criteria:

Effectiveness. This criterion focuses on the degree to which an alternative reduces toxicity, mobility, or volume through treatment; minimizes residual risks and affords long term protection; complies with ARARs, and minimizes short-term impacts. It also focuses on how quickly the alternative achieves protection with a minimum of short term impact in comparison to how quickly the protection shall be achieved.

Implementability. This criterion focuses on the technical feasibility and availability of the technologies that each alternative would employ and the administrative feasibility of implementing the alternative.

Cost. The costs of construction and any long-term costs to operate and maintain the alternatives shall be considered.

2. Range of Alternatives

The Respondents shall develop a series of alternatives for the Site. These alternatives shall include at a minimum, the following:

a. An alternative that, throughout the entire groundwater plume and plume discharge to surface water, reduces the contaminant concentrations to meet all MCLs, AWQC, ARARs, a 10^{-6} excess cancer risk, and Hazard Index (HI) of 1 for the identified receptors. It shall achieve this objective as rapidly as possible and must be completed in less than ten (10) years, if possible.

b. A limited action alternative that would rely solely upon monitored natural attenuation and institutional controls to meet clean-up standards. Evaluation of these criteria in support of monitored natural attenuation will require that all appropriate monitored natural attenuation parameters be collected during the RI to demonstrate that natural attenuation is occurring. In addition time frames for achieving natural attenuation must be calculated. The areas subject to institutional controls must also consider the effects of groundwater withdrawal.

c. For groundwater response actions, the Respondents shall develop a limited number of remedial alternatives that attain site-specific remediation levels at the compliance boundary of the L&RR landfill within different restoration time periods, using combination of active restoration, containment and monitored natural attenuation, as well as achieving remedial action objectives for the surface water and/or sediment.

The Respondents shall give special consideration to innovative technologies. If

any innovative technologies pertinent to the Site can be identified, then one or more such technologies shall be evaluated beyond the initial screening.

A no-action alternative that involves no long-term maintenance shall be carried through the development and screening, and shall be analyzed during the Detailed Analysis of Alternatives.

C. Reporting

All alternatives shall be presented in the Feasibility Study Report. If an alternative is to be eliminated, it must be screened out for clearly stated reasons contained in the NCP and other EPA guidance.

The Respondents shall submit a Feasibility Study Report that contains a chart of all alternatives and the analysis of the basic factors described in this SOW. The report shall justify deleting, refining, or adding alternatives. It shall also identify the data needed to select a remedy and the work plans for studies designed to obtain the data. The report shall contain charts, graphs, and other graphics to display the anticipated effectiveness of the alternatives including, for example:

1. maps showing the three-dimensional extent of contamination across the Site;

2. maps showing equal concentration lines for various potential soil clean-up levels and correlated risk levels; and

3. graphs showing the predicted concentration reduction over time for potential groundwater remedial alternatives.

D. Post-Screening Field Investigation (If Required)

A Post-Screening Field Investigation could be required if EPA, after reasonable opportunity for review and comment by RIDEM, determines that additional data are necessary to meet the objectives of the RI/FS.

The purpose and objective of the Post-Screening Field Investigations are to provide for the information required to fill all relevant data gaps and to provide information necessary to perform the Detailed Analysis of Alternatives and the preparation of the FS Report. This may include, but not be limited to, bench and pilot scale treatability studies of potential technologies, literature searches, and field investigations. Field investigations shall be performed by the Respondents if information relevant to the selection of a remedial action alternative is not sufficient to perform a Detailed Analysis of Alternatives that shall result in a remedy consistent with the NCP. EPA shall have the final authority to determine if further field investigations are necessary.

II. DETAILED ANALYSIS OF ALTERNATIVES

A. Analysis

The detailed analysis of alternatives consists of an assessment of individual alternatives against each of the nine (9) evaluation criteria and a comparative analysis that focuses upon the relative performance of each alternative against those criteria. The analysis shall be consistent with the NCP and shall consider the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final (OSWER Directive 9355.3-01).

The nine criteria are as follows:

1. Overall protection of human health and the environment
2. Compliance with ARARs
3. Long term effectiveness and permanence
4. Reduction of toxicity, mobility, or volume through treatment
5. Short term effectiveness
6. Implementability
7. Cost
8. State acceptance
9. Community acceptance

Criteria one (1) and two (2) from the above list are considered threshold criteria. This means that an alternative must meet these two (2) criteria or must contain a statutory basis for waiving compliance with specific ARARs in order for it to be eligible for selection. Criteria three (3) through seven (7) on the above list are considered primary balancing criteria. These five (5) criteria are used to further evaluate alternatives that satisfy the threshold criteria. The final two (2) criteria, state acceptance and community acceptance, are modifying criteria that shall be considered by EPA in remedy selection.

B. Reporting

The Detailed Analysis of Alternatives, which shall be presented in the FS Report, shall contain the following:

1. further definition of each alternative with respect to the volumes or areas of contaminated media to be addressed, the technologies to be used, and any performance requirements associated with those technologies;

2. a process scheme for each alternative which describes how each process stream, waste stream, emission residual, or treatment product shall be handled, treated and/or disposed;

3. an assessment and a summary profile of each alternative against the nine (9) evaluation criteria; and

4. a comparative analysis among the alternatives to assess the relative performance of each alternative with respect to each evaluation criteria.

III. FEASIBILITY STUDY REPORT

The Respondents shall submit a complete FS Report. The FS Report shall conform to the NCP, the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final (EPA/540/G-89/004, OSWER Directive 9355.3-01, October 1988), and any additional format, guidance, or examples provided by EPA. The FS shall include a chart that delineates each criteria for each alternative evaluated. Other graphics shall be included that allow for comparisons of multiple alternatives at various risk, cost, and clean-up levels of groundwater, surface water and sediments, such as projected groundwater and surface water concentrations plotted against time. The Respondents shall compare the alternatives by using the listed criteria and other appropriate criteria consistent with the NCP and all previous sections of this SOW.

EPA will make the approved RI and FS Reports available for public comment. The Respondents shall provide technical assistance in preparing the proposed plan and any public meetings and hearings. After the public comment period, the Respondents shall assist EPA in preparing a responsiveness summary. This assistance shall include, but not be limited to, providing EPA with draft responses to any comments within three (3) weeks of the date EPA provides the comments to the Respondents.

F. NON-TIME CRITICAL REMOVAL ACTION REQUIREMENTS

If, at any time during the RI/FS process, the Respondents propose or EPA determines that an EE/CA should be performed at the Site in preparation for an NTCRA, the Respondents shall conduct an EE/CA concurrently with the RI/FS. The main objectives of the EE/CA are to:

1. identify the objectives of the NTCRA;
2. perform a streamlined risk assessment; and
3. analyze the effectiveness, implementability and cost of various alternatives that may satisfy these objectives.

The EE/CA may also include field investigations, if the available information is not sufficient to perform the analysis of the alternatives required to ensure that the NTCRA is consistent with the NCP.

After conducting all necessary field investigations and analyses, the Respondents shall submit the results in an EE/CA Report. Following EPA comments on the initial EE/CA Report, the Respondents shall prepare a revised EE/CA Report incorporating all EPA comments and requested changes. Depending on Site conditions, the acceptability of the revised EE/CA Report, or other conditions, EPA may either request additional EE/CA reports, until a Final EE/CA report is produced which EPA determines is satisfactory for public comment, or EPA may choose to complete the document.

After EPA conducts a public comment period on the Final EE/CA Report, the Respondents shall also assist EPA in preparing a responsiveness summary. After the public comment period, EPA will issue its decision on the final selection of the appropriate NTCRA in an Action Memorandum.

If Respondents agree to perform the NTCRA, then the Respondents shall perform all activities described in the Action Memorandum as an NTCRA, consistent with the-following guidance documents:

1. Guidance on Implementation of the Superfund Accelerated Cleanup Model (SACM) under CERCLA and the NCP (EPA OSWER Directive No. 9203.1-03, July 7, 1992);

2. Early Action and Long-Term Action Under SACM - Interim Guidance (EPA OSWER Directive No. 9203.1-051, December 1992); and

3. Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA (EPA/540-R-93-057, OSWER Directive No.9360.0-32, August 1993).

If Respondents agree to perform the NTCRA, they shall notify EPA and RIDEM in writing of their decision within 30 days of the date EPA issues the Action Memorandum, and shall submit a NTCRA Work Plan to EPA for approval within 60 days of the date EPA issues the Action Memorandum, unless EPA determines that Respondents needs more time to complete the Work Plan. Upon approval, the Respondents shall perform the NTCRA pursuant to the Work Plan and under the terms of the Settlement Agreement.

Nothing in this Settlement Agreement or Scope of Work shall be construed to limit EPA's authority to require Respondents to perform the NTCRA.